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DISEASES CAUSED BY BACTERIA AND FUNGI

BUTLER, L. O. (1959). **Studies on the preparation and isoelectric point of staphylococcal α -haemolysin.** — *Biochem. J.* **71**, 67-73. [Author's summary modified.] **1979**

Attempts to purify staphylococcal α -haemolysin by means of ammonium sulphate, ethanol and Cellosolve (2-methoxyethanol) failed to give preparations of very high purity or activity. Ammonium sulphate was relatively harmless but limited in its powers of fractionation. Cellosolve, in contrast with ethanol, effected a further step in purification.

Comparison of the ratios of the lethal to haemolytic activities of the preparations indicates a differential denaturation of the active factors. Support is given to the view that there is a multiplicity of active factors.

The isoelectric point of the haemolytic factor was determined by an electrophoretic-fractionation method and found to be at pH 6.4.

KIENTZ, M. & PREUNER, R. (1959). Über den Nachweis des Staphylokokken-Enterotoxins. III. Untersuchungen über die Wirkung des Staphylokokken-Enterotoxins auf Hühnerembryonen. [Demonstration of staphylococcus enterotoxin. III. Action of staphylococcus enterotoxin on chick embryos.]—*Zbl. Bakt. I. (Orig.)* **174**, 56-70. [Summaries in English, French, Spanish and Russian.] **1980**

The enterotoxin could be demonstrated qualitatively by the lethal action of culture filtrates on chick embryos aged 9 or 10 days.

—R.M.

NEWBOULD, F. H. S. & BARNUM, D. A. (1958). **The effect of dipping cows' teats in a germicide after milking on the number of micrococci on the teat-cup liners.** — *J. Milk Tech.* **21**, 348-349. **1981**

Two teats of each cow and the teat cups were immersed in germicide immediately after milking for 4 weeks, while the other two teats served as controls. Three times a week the teat-

cup liners were swabbed and the micrococci counted. Counts were reduced most by tincture of iodine (1% or 2.5%), but the teats became cracked and scaly, though not sore. Iodophor (100 p.p.m. available iodine), sodium hypochlorite (1,000 p.p.m. available chlorine), and 70% ethyl alcohol also reduced counts. Chlorhexidine (800 p.p.m.) did not, and dipping in warm water increased counts.—M.G.G.

DAVIDSON, I. & SLAVIN, G. (1958). **The disinfection of milking units in the control of mastitis due to *Streptococcus agalactiae*.**—*Vet. Rec.* **70**, 893-898. [Authors' summary modified.] **1982**

It has been shown that, when a cow is milked by machine, material regularly passes from one teat-cup to another and occasionally from the long milk tube into the teat-cups. It is desirable to disinfect all parts of the milking unit, from the teat-cups to the long milk tube, after each cow is milked.

The distribution of *Str. agalactiae* in various parts of milking units which had been used to milk infected cows was investigated.

Various methods which can be used to disinfect milking units after milking each cow were compared. When a milking unit was contaminated with sticky, purulent material, all methods gave irregular results and often large numbers of pathogens survived. When the milk contained clots only, rinsing with running water reduced the number of *Str. agalactiae* to a comparatively low level. Once this level had been reached further rinsing had little effect. Greater numbers of organisms survived treatment with disinfectants. The most effective of the methods tried was the circulation of water at 70°C. through the unit but even this did not effect complete disinfection.

DUBEDOUT, C. (1958). Note sur une pneumococcie contagieuse du poussin. [Pneumococcus infection in chicks.]—*Rec. Méd. vét.*

134, 821-824. [Summaries in English and Spanish.] 1983

In the winter of 1957/58 an epidemic of pneumonia caused up to 95% mortality in flocks of chicks in south-west France. The chief symptom was dyspnoea, sometimes with whistling. A pneumococcus was isolated from bone marrow, brain and liver. Affected chicks were cured by s/c injection of 20 mg. of dihydrostreptomycin. —M.G.G.

PIENING, C. (1958). Gehäuftes Auftreten von Milzbrand im Lande Schleswig-Holstein bei Rindern. [Increased incidence of anthrax in cattle in Schleswig-Holstein.]—*Berl. Münch. tierärztl. Wschr.* 71, 474-475. [Summary in English.] 1984

During the winter months of 1957/58, 35 cases of anthrax were reported in cattle in Schleswig-Holstein, compared with between 14 and 18 cases in each of the 4 preceding years. A cattle food containing bone meal made from imported bones was suspected, for these reasons: young cattle not given such food were unaffected, cases occurred throughout the region, instead of, as is usual, near rivers receiving effluent from leather works, they did not occur in regions where this bone meal was not used, and they ceased abruptly when cattle were turned on to spring pasture. G.pigs were fed the suspected cattle food, but did not develop anthrax.—M.G.G.

SCHLISSER, T. (1958). Zur Frage der Ausscheidung humaner Tuberkelbakterien in der Milch. [Human type tubercle bacilli in cow's milk.]—*Rindertuberk. u. Brucellose* 7, 102-108. 1985

Two healthy cows aged 4 and 5½ years were infected i/v with human type tubercle bacilli. No such bacilli were demonstrated in milk samples taken during the next 3 months, either microscopically, by g.pig inoculation, or by feeding to pigs undergoing tuberculin tests.

A milk sample was taken from each quarter of 14 cows infected naturally with human type tubercle bacilli from their attendants. All the quarters were clinically normal. One sample yielded human type tubercle bacilli.—M.G.G.

MEYN, A. (1959). Die Fortschritte der Rindertuberkulosebekämpfung in der Bundesrepublik (Stand von 1.7.1958). [Progress in the control of bovine tuberculosis in the German Federal Republic.]—*Rindertuberk. u. Brucellose* 8, 1-7. 1986

Between 1st July, 1957 and 1st July, 1958, 168,307 herds, containing 1,683,607 cattle, were

declared free from TB., an increase of 14.2% of all herds and 13.4% of all cattle. On the 1st July, 1958, there were 990,180 attested herds in the German Federal Republic, 74.2% of the total, and 72% of all the cattle were in attested herds. [See also *V.B.* 28, 3823.]—M.G.G.

LESSLIE, I. W. (1959). A comparison of biological and some cultural methods for the primary isolation of *Mycobacterium tuberculosis*.—*J. comp. Path.* 69, 1-10. [Author's conclusions modified.] 1987

The use of Stonebrink and 5 other culture media was compared with g.pig inoculation in the routine diagnostic examination of material for *M. tuberculosis*, bovine type. Stonebrink medium was superior to the other media in that tubercle bacilli were recovered from a larger number of samples, growth was more rapid and luxuriant and fewer cultures were contaminated. G.pig inoculation was superior to cultural examination for the isolation of bovine type tubercle bacilli from animal tissues. Tuberculin tests on g.pigs 3 weeks after inoculation proved reliable and helped in obtaining an early positive diagnosis and also in the differentiation of the avian and mammalian types of tubercle bacilli.

I. MAGNUSSON, M. & BENTZON, M. W. (1958). Preparation of purified tuberculin RT 23.—*Bull. World Hlth Org.* 19, 829-843. [Summary in French.] 1988

II. GULD, J., BENTZON, M. W., BLEIKER, M. A., GRIEP, W. A., MAGNUSSON, M. & WAALER, H. (1958). Standardization of a new batch of purified tuberculin (PPD) intended for international use.—*Ibid.* 845-951. [Summary in French.] 1989

I & II. The preparation and standardization of a batch of more than 500 g. of dried PPD tuberculin at the State Serum Institute in Copenhagen was described. It was estimated that this amount would supply the needs of human tuberculin testing throughout the world for several years. The batch was prepared by mixing 77 smaller lots of tuberculin, selected from a total of 95 lots.—R.M.

CHODKOWSKI, A., KOZŁOWSKI, F. & LIPŃSKI, S. (1958). Badania nad wartością tuberkuliny PPD bydłowej i PPD ptaków prod. "Biowet" w Puławach w porównaniu z tuberkuliną PPD ssaków i PPD ptaków prod. Weybridge. [Comparison of Polish bovine and avian P.P.D. with Weybridge P.P.D.]—*Med. Wet., Warszawa* 14, 586-589. [In Polish.] 1990

Although better than Koch's O.T. the

Polish bovine and avian P.P.D. proved far less specific than the Weybridge P.P.D. and the authors are of the opinion that it is too early to use the Polish P.P.D. for general testing.

—M. GITTER.

PATTERSON, D. S. P. & PATERSON, A. B. (1959).

The complement-fixing capacity of aqueous extracts of mycobacteria. — *J. comp. Path.* **69**, 65-77. [Authors' conclusions.] **1991**

The complement-fixing capacity of aqueous extracts of acetone-extracted mycobacteria varied between the mycobacterial types and between successive preparations of the same type.

No evidence could be obtained of serological type specificity of aqueous antigen extracts when tested against experimentally produced anti-mycobacterial bovine sera.

No correlation was found between serological activity and the content of total nitrogen, protein nitrogen, phosphorus or carbohydrate.

A correlation existed between the residual lipoidal material of antigens and serological activity; the activity was independent of the type of mycobacterium from which the extract was derived.

Examination of 4 active and 4 relatively inactive materials showed that activity was related quantitatively to their content of crude phosphatide phosphorus, and was again independent of mycobacterial type.

The nature of the active principle is discussed.

HERBERT, C. N., DOYLE, T. M. & PATERSON, A. B. (1959). **Tuberculin sensitivity in attested cattle vaccinated against Johne's disease.** — *Vet. Rec.* **71**, 108-111. [Authors' summary.] **1992**

Vaccination of attested cattle with *Mycobacterium johnei* in oil raises the level of reactivity to avian and mammalian tuberculin to about 8 times that of the normal attested population. The overall effect is that of an artificially induced source of non-specific sensitisation which increases the difficulty of interpreting the significance of reactions to mammalian tuberculin.

RICE, C. E. & ANNAU, E. (1959). **Hypersensitivity and circulating antibodies in Johne's disease.** — *Canad. J. publ. Hlth* **50**, 29. [Authors' abstr. modified.] **1993**

Cattle and g.pigs immunized with Johne's bacillus in adjuvant developed c.f. activity with a polysaccharide fraction and with a protein fraction prepared from unheated organisms, but

not with johnin P.P.D. But in g.pigs repeatedly injected with johnin P.P.D. in adjuvant, c.f. activity as well as pronounced skin sensitivity was demonstrable. Serum collected from these g.pigs 24 and 49 hours after a johnin test showed no increase in c.f. activity with johnin P.P.D. Neither was it possible to transfer passively skin sensitivity to johnin to normal animals by inj. of alpha-globulin fractions of such sera.

ALMEJEW, C. S. [AL'MEEV, K. S.] (1958). **Enteritis paratuberculosis beim Yak. [Johne's disease in yaks.]** — *Mh. VetMed.* **13**, 645-649. **1994**

Of 165 yaks, imported from China and slaughtered at a meat processing plant at Frunze, Kirghiz S.S.R., three were suspected of Johne's disease. The three carcasses were emaciated and visible mucosae were anaemic. Gastro-intestinal lesions, typical of Johne's disease, were described in considerable detail. All 165 animals were infested with liver fluke and before slaughter had yielded negative tuberculin eye tests. Pulmonary or hepatic echinococcosis was present in 129. Yaks are also bred locally and crossed with indigenous Kirghiz cattle.—E.G.

HU, T. P., KUNG, C. D. & AU, B. H. (1958). **[Study on the experimental infection of cattle, sheep and goats with glanders bacilli.]** — *Acta vet. zootech. sinica* **3**, 36-43. [In Chinese. Summaries in English and Russian. Abst. from English summary.] **1995**

Intravenous or intratesticular inoculation of glanders bacilli caused acute toxæmia and rapid death in sheep and goats. S/c inj. was also lethal but the infection was less acute. Cattle resisted infection by all three routes, and although there was extensive destruction of testicle after intratesticular inj., the cattle did not die.—R.M.

RICHTER, W. (1958). **Die allergischen Erkrankungen der Rotlaufserumperde und ihre Behandlung. [Allergic diseases of horses used for producing swine erysipelas immune serum.]** — *Arch. exp. VetMed.* **12**, 503-523. **1996**

R. included not only disease resulting directly from the introduction of an antigen into the body but also the effects which may result from a combination of antigen with antibody. Endocarditis affecting the heart valves is one of the most important conditions, while another is swelling and pain of the hock and fetlock joints with swelling of the tendon sheaths, also myalgia of the neck, shoulder, and loin muscles. In horses used for long periods for serum pro-

duction, cirrhosis or fatty degeneration of the liver occurs. In some instances shock following the injections is marked, and can amount to anaphylaxis.

For prevention, it is essential first to select a suitable strain of *Erysipelas bacillus* and R. found that mixing a haemagglutinating with a non-haemagglutinating strain gave satisfactory serum titres without causing endocarditis. In general it was found that animals which showed some rheumatic signs and symptoms produced a satisfactory titre. These rheumatic lesions improved immediately the animals started grazing after the winter or with the first green feed, hence the value of vitamin C is great. It also has an action in improving the serum titres, while horses are more easily immunized in the spring than at other times.

Animals with arthritic conditions were treated with anti-histaminics of various kinds given by mouth or parenterally. 23 horses with arthritic conditions were treated in all 63 times (over a period of some years); on 38 occasions the treatment had good results which would not have occurred otherwise. Animals with endocarditis were not treated.—W. K. DUNSCOMBE.

STRAUCH, D. & NITZSCHKE, E. (1958). Über die hämagglutinierenden Eigenschaften von *Erysipelothrix rhusiopathiae*. [Studies on the haemagglutinating properties of *E. rhusiopathiae*.]—*Zbl. VetMed.* 5, 968-976. [Summaries in English, French and Spanish. English summary modified.] 1997

Haemagglutination caused by *E. rhusiopathiae* is dependent on temperature. The A strains investigated never caused haemagglutination at 37°C.; at 20° to 24°C. they partly showed a weak reaction; at 2° to 4° the majority of these strains always showed high haemagglutination titres. B strains always gave haemagglutination under the same conditions. The haemagglutinating capacity of B strains was still present after mechanical disintegration of the cells. The haemagglutinin could not be separated from the complement-fixing antigen at 12,000 r.p.m. Haemagglutinating fractions also could be obtained by disintegration of two A strains and one N. strain. At 2° to 4°C. the r.b.c. of man, cattle, sheep, g.pigs, mice and fowls were agglutinated by the organism.

OYRZANOWSKA, J. (1958). Reakcja myszek na woskowie różnicy wprowadzone *per os*. [Reaction in mice to orally administered cultures of *E. rhusiopathiae*.]—*Roczn. Nauk rol.* 68, 241-247. [In Polish. Summaries in English and Russian.] 1998

Feeding of bread soaked in 24-hour virulent broth cultures of *E. rhusiopathiae* had no effect on mice and failed to protect them against s/c injections of the cultures. Feeding of mice for 9 days on cultures of *E. rhusiopathiae* followed 7 days later by administration of Staub's culture s/c or by scarification (Fortner's method) failed to provoke any reaction.—M. GITTER.

KUREK, C. & KANICKI, M. (1958). Spostrzeżenia nad zmiennością szczepu *Erysipelothrix monocytogenes* (*Listeria monocytogenes*) "Puławy" wyosobnionego ze świń. [Variability of a strain of *Erysipelothrix* (*Listeria*) *monocytogenes* from pigs.]—*Roczn. Nauk rol.* 68, 227-239. [In Polish. Summaries in English and Russian.] 1999

The organism was recovered from 2 of 6 pigs from the same pigsty and having lesions of gastro-enteritis. The organism proved pathogenic to mice, rabbits, and hens but not to pigeons or to pigs. After 5 months of subculturing on blood agar and 1% glucose broth, the 2 strains became gradually attenuated and although they eventually ceased to be pathogenic they retained their monocytogenic effect when injected i/v into rabbits.—M. GITTER.

HELD, R. (1958). Listeriose bei einer Katze. [Listeria infection in a cat.]—*Zbl. Bakt. I. (Orig.)* 173, 485-486. 2000

Erysipelothrix (*Listeria*) *monocytogenes* was isolated from a 3-year-old cat that had died. P.M. examination revealed an enlarged liver, a hyperplastic spleen, swollen intestinal lymph nodes, petechial sub-epicardial haemorrhages, and signs of septicaemia. Fowls belonging to the owner of the cat were negative to agglutination tests using antigen prepared from the isolated strain.—M.G.G.

SALAZAR RAMIREZ, B. (1958). Les pasteurelloses en Colombie. [Pasteurellosis in animals in Colombia.]—*Bull. Off. int. Epiz.* 50, May, pp. 158-175. 2001

The effect of climatic and environmental conditions on pasteurellosis and its diagnosis in Colombia, and the different forms of the disease are discussed. The disease in cattle, pigs, fowls and horses is described. In cattle it is practically always associated with piroplasmosis. The pulmonary form is the commonest and the oedematous form is rare. The intestinal form is usually secondary to coccidiosis, salmonellosis, piroplasmosis, etc., while the cerebral form (more frequent than commonly thought) is difficult to distinguish from listeriosis, rabies and certain

forms of poisoning. In pigs the pulmonary form is commonest and may be confused with swine fever. In horses the disease is relatively rare. The question of saprophytism of *Pasteurella* and preventive vaccination are discussed.

—T.E.G.R.

STAMATIN, N. (1958). Recherches concernant les pasteurelloses animales dans la République Populaire Roumaine. [*Pasteurellosis in animals in Roumania.*] — *Bull. Off. int. Epiz.* 50, May, pp. 212-223. [Summary in English.] 2002

Pasteurellosis in animals is widespread in Roumania and has, therefore, been the subject of extensive research, which is here reviewed.

—T.E.G.R.

PALOTAY, J. L. & NEWHALL, J. H. (1958). Pneumonia in newly weaned calves: report of a field study.—*J. Amer. vet. med. Ass.* 133, 353-357. 2003

Respiratory infections often occur after newly weaned calves have been transported by rail or road or driven on foot. An outbreak is described which occurred in animals vaccinated with a killed triple vaccine (*Pasteurella*, malignant oedema, and blackleg organisms) 5 days after being moved. Morbidity in the first 1,000 was 44.2% and the mortality 5.6%. P.M. examination revealed a severe pneumonia and *Past. haemolytica* was recovered from the lungs. The remaining 1,600 calves were weaned 2 weeks later, placed in small pens in a feedlot, and given a long acting penicillin-streptomycin preparation prophylactically and therapeutically. Amongst these, the morbidity was only 10% and no deaths occurred.—A. ACKROYD.

UBEEV, A. D. (1958). [The high susceptibility of yaks to pasteurellosis.] — *Veterinariya, Moscow* 35, No. 11, pp. 20-21. [In Russian.] 2004

Outbreaks of *Past. septica* infection have been observed in yaks, cattle, and their hybrids in mountainous country, where the animals are subjected to high humidity and wide seasonal variations in temp. In yaks and hybrids the disease is usually acute or peracute. For prophylaxis, two i/m injections of formolized vaccine, 12-15 days apart, are given in March and again in August.—M.G.G.

ALEKSANDROV, N. A. (1958). [High salt content in the food: a factor provoking pasteurellosis in pigs.] — *Veterinariya, Moscow* 35, No. 12 pp. 61-62. [In Russian.] 2005

In an unstated number of pigs which died from haemorrhagic septicaemia, the sodium

chloride concentration in the stomach contents ranged from 1 to 1.5% and in the liver from 0.5 to 0.7%. Normal concentrations of sodium chloride were given as 0.17-0.28% for stomach contents and 0.3-0.65% for liver.—R.M.

SMITH, G. R. (1959). The production in mice of active immunity against *Pasteurella haemolytica*. — *J. comp. Path.* 69, 116-124. [Author's conclusions modified.] 2006

Various methods of vaccination were found to produce demonstrable active immunity in mice against intraperitoneal challenge with *Past. haemolytica* in mucin. (Immune antibody in the sera of vaccinated mice was demonstrable by passive mouse protection tests.) I/p vaccination produced a higher level of protection than s/c vaccination. In this respect however no difference could be shown between the efficiencies of i/p and i/v vaccination.

The injection of certain fluids including normal saline into the peritoneal cavity of mice 5-6 hours before i/p challenge with *Past. haemolytica* in mucin caused a non-specific resistance which was, however, overcome by increasing the challenge dose.

MAGUIRE, L. C. (1958). The role of *Bacterium viscosum equi* in the causation of equine disease.—*Vet. Rec.* 70, 989-991. [Author's summary modified.] 2007

An account is given of the preparturient and multiple vaccination of mares to produce immunity in the new-born foal. Reference is also made to the various pathological conditions thought to be associated with *Bact. viscosum equi* infection.

HOWARD, J. G. & WARDLAW, A. C. (1958). The opsonic effect of normal serum on the uptake of bacteria by the reticulo-endothelial system. Perfusion studies with isolated rat liver.—*Immunology* 1, 338-352. [Authors' summary modified.] 2008

A technique is described for perfusing the isolated rat liver with viable bacteria and for comparing their phagocytosis by Kupffer cells when different suspending fluids are used.

Various factors that modify uptake of bacteria have been studied, notably the nature of the bacteria and their concentration, the flow rate through the liver, the age of the liver and the effect of repeated perfusion.

Normal human, rat and mouse sera exerted an opsonic effect on the phagocytosis of *Escherichia coli*. Thus the average uptake of these bacteria suspended in Ringer-Locke solution was 11%, as compared with 41% in serum. A reduction in opsonic activity of human serum

was produced by heat at 56° for 30 min., absorption with the homologous strain or with an antigen-antibody system. Activity was completely abolished by homologous absorption followed by heat at 56° or absorption with an antigen-antibody system or with zymosan. Full opsonic activity was shown by a mixture of heated serum and *E. coli*-absorbed serum.

It is concluded that the serum factors that contribute to opsonic activity in this system are specific antibody, complement and another heat-labile factor. The possible identity of the last-named with properdin is considered.

ANON. (1959). *Salmonella* organisms in animal feeding stuffs and fertilizers. — *Mon. Bull. Minist. Hlth Lab. Serv.* **18**, 26-34. [Summary modified.] **2009**

1,262 samples, both imported and home-produced, of organic fertilizers and animal feeding stuffs were examined.

Salmonella were present in a wide variety of products, including raw and processed materials and complete feeding meals and fertilizers. A high incidence was found in imported bones and bone products and in Angola fishmeal. Altogether 88 serotypes were isolated, including 6 new types.

Viable counts made on a number of different types of sample were low—usually less than 100 *salmonella* organisms per 100 g.

Examination of samples from the environment of the factory suggest that satisfactorily processed material may be contaminated from factory dust and sacks.

Examination of 103 samples of bone-meal and hoof and horn revealed anthrax bacilli in 5 samples.

STABLEFORTH, A. W. (1958). Diagnostic de la brucellose bovine: comparaison des méthodes actuellement en usage. [The methods in use for the diagnosis of bovine brucellosis.] — *Bull. Off. int. Epiz.* **50**, May. pp. 107-122. [Summary in English.] **2010**

The ring test and the tube and plate agglutination tests, supplemented by bacteriological examination of foetus or placenta are most widely used for the detection of infected herds. The c.f. test or the milk whey test (for probable excretors) is also used and in one country, at least, whey positive milk samples are subjected to cultural tests. A combination of the milk ring, whey and cultural tests is an economical method for the control of spread and for eventual eradication of infection. The vaginal mucus test has also been used in one country, where a positive result is regarded as

diagnostic. The blocking test, Coombs test, and allergic tests have not been needed for cattle though they might be of value in problem herds. In view of the importance of the amount of brucella antibody in the test sample a comparative study is made of the sensitivity or severity of the tube agglutination, plate or rapid agglutination and milk ring tests in the different countries using them.—T.E.G.R.

POPE, E. P. & RUEDY, D. D. (1959). Effects of ambient temperatures on the brucellosis rapid plate-agglutination test.—*J. Amer. vet. med. Ass.* **134**, 166-167. [Authors' summary modified.] **2011**

Higher ambient temperature significantly increased the number of suspicious and reactor titres in the rapid plate serum agglutination test for brucellosis.

HAJDU, Š. (1958). Rýchly antiglobulínový test na podložnom sklíčku pre masové vyšetrenie na brucelózu. [Rapid antiglobulin slide test in brucellosis.]—*Vet. Čas.* **7**, 569-579. [In Slovak. Summaries in English, French, German and Russian.] **2012**

A slide modification of the Coombs antiglobulin test, suitable for screening herds for brucellosis, was described. It was based on the findings that incomplete, heat-resistant antibodies were regularly present in the serum of cattle with brucellosis, generally in titres higher than complete antibodies. Serum samples are examined in one dilution only. Amounts of 0.1 ml. each of serum are put in test tubes, diluted with 0.5 ml. of 0.85% saline, inactivated at 70°C. for 10 min., 0.05 ml. of undiluted antigen added and kept at 37°C. for 30 min. After addition of 1.5 ml. of saline and centrifugation for 20 min. at 4000 r.p.m., the supernatant fluid is drawn off, the sediment resuspended in saline, again centrifuged and resuspended. With a micropipette antiglobulin serum, diluted 1:5-1:10, is put in drops of 0.01 ml. on a large slide to which the sediment is added. If agglutination takes place within a few sec., the test is strongly positive. If there is no agglutination within 10 min., the test is negative. In a field trial it proved to be more sensitive than tube agglutination, complement fixation, ring and skin tests.—E.G.

HEUNER, F. (1958). Die wichtigsten Vorschriften zur Bekämpfung der Rinderbrucellose in den deutschen Bundesländern. [Regulations concerning control of brucellosis in cattle in Federal Germany.]—*Berl. Münch. tierärztl. Wschr.* **71**, 476-480. **2013**

A table gives the most important regulations

governing bovine brucellosis in different regions of the German Federal Republic. In Schleswig-Holstein and Bavaria, herds with negative blood titres are considered free from brucellosis regardless of any history of vaccination. In the rest of the country vaccination may only be carried out in infected and endangered herds. In Brëmen and Lower Saxony a herd can be declared free from brucellosis 6 months after vaccination, but in Hessen at least 5 years must elapse, and in the Rhineland-Palatinate no herd that has undergone vaccination may be declared free from brucellosis. These differences can give rise to misunderstandings and seriously hamper the eradication of the disease.—M.G.G.

KUTLEŠA, I. (1958). Istraživanja o autosterilizaciji bruceloznih goveda. [**Spontaneous recovery from brucellosis in cattle.**] — *Vet. Arhiv* **23**, 183-188. [In Croat. Summaries in English and French.] **2014**

Spontaneous recovery in bovine brucellosis was studied for four years in 60 reactors, removed to a special, isolated byre, about five miles from the remaining brucellosis-free cattle of the same farm. During this period 37 cattle were slaughtered, 24 being carriers and 13 for non-productivity. Evidence of spontaneous recovery in the remainder was obtained by repeated agglutination tests, whey plate and ring tests, by bacteriological examination, g-pig inoculation, etc.—E.G.

TERPSTRA, J. I. (1958). Het kweken van brucella's uit verontreinigd materiaal. [**Cultivation of brucella from contaminated material.**]—*Tijdschr. Diergeneesk.* **83**, 1097-1099. [In Dutch. Summaries in English, French and German.] **2015**

T. recommended a modification of the medium described by Morriss [*V.B.* **27**, 1021]. It was composed of 100 mg. actidione, 25,000 units bacitracin, 4,000 units polymyxin and 0.02 ml. "Furaspor" [5-nitrofurfurylmethyl ether]. The conc. of "Furaspor" was lower than that employed by Morriss.—R.M.

IVANOVA, V. I. (1959). [**The use of vaccines against brucellosis.**]—*Veterinariya, Moscow* **36**, No. 1 pp. 30-32. [In Russian.] **2016**

During the past 15-20 years 11 killed and 5 live brucella vaccines have been produced in the U.S.S.R. A commission of the U.S.S.R. Ministry of Agriculture has tested and compared the vaccines and at present favours Strain 19 for cattle and sheep and the Ukrainian crystal violet vaccine [*V.B.* **26**, 3392] for cattle only. The results of a small comparative trial of 4

different vaccines on sheep were given: details of this trial have been published elsewhere [*V.B.* **29**, 325].—R.M.

MAIBORODA, A. A. (1956). [**Immunization of pigs against brucellosis with U.I.E.V. killed vaccine.**]—*Nauch. Trud. Ukrain. Inst. exp. Vet.* **23**, 67-75. [In Russian.] **2017**

Lab. and field experiments were described. In the lab. experiments 5 pigs aged 6-7 months were each given two i/m injections at an interval of 21 days of 5 ml. of the *Br. abortus* crystal violet vaccine previously described [*V.B.* **26**, 3392]. There were 4 unvaccinated controls. Agglutinin titres in vaccinated pigs increased to 1:800 after the second inoculation and fluctuated between 1:200 and 1:400 during the next 2 months. Two months after the second inoculation all pigs were challenged by instillation into the conjunctiva of 10-15 million organisms of a strain of *Br. suis* recently isolated from a sow which had aborted. Agglutinin titres were studied until 36 days after infection, when all pigs were killed for bacteriological examination. Organs from vaccinated pigs did not contain brucella, but various organs from the controls were infected; one control pig developed orchitis 30 days after infection.

The results of field trials lasting at least 2 years on 4 large infected farms were assessed by the number of abortions or by diagnostic tests before and after vaccination. The results were good enough to indicate that vaccination merited further study.—R.M.

GEWENIGER, H. (1958). Die Schaf-Brucellose im Regierungsbezirk Darmstadt. [**Brucellosis of sheep in the Darmstadt district.**]—*Dtsch. tierärztl. Wschr.* **65**, 650-652. [Summary in English.] **2018**

From 1953-1958 *Br. melitensis* infection was diagnosed, by agglutination and c.f. tests, in 17 flocks of sheep in the Darmstadt district. Wandering sheep flocks are considered to have introduced the disease. Orchitis was the only clin. symptom. Abortions were few. Eleven flocks were slaughtered, and 5 mildly infected flocks were freed by slaughtering the reactors to about 3 consecutive serological examinations. Slaughter of the whole flock is, however, considered to be the cheapest and most effective control measure. The infection was diagnosed in 21 human patients. Planned control of the disease in West Germany is urged.—M.G.G.

ZAMBELLI, F. (1958). Note sulla diagnosi della brucellosi nei caprini. [**Diagnosis of brucel-**

losis in goats.]—*Veterinaria, Milano* 7, 217-218. 2019

Results of the milk-ring, agglutination and allergic tests in two small herds of goats led to the conclusions that: there are no blocking antibodies in goat serum; the allergic test is more reliable than the serological tests (it does not sensitize animals and, therefore, does not cause false positive reactions) and the ring test is difficult in the case of goats because the milk fat globules precipitate to the bottom.—T.E.G.R.

BRANCKER, W. M. & T-W-FIENNES, R. N. (1959). Abortion of a woolly monkey (*Lagothrix lagotricha*) possibly associated with brucellosis. — *Vet. Rec.* 71, 13. [Authors' summary modified.] 2020

Hill (1957) recorded the only known case of a pregnancy in a Humboldt's Woolly Monkey (*L. lagotricha*) in captivity. This pregnancy terminated in abortion at 3 months (gestation period probably 4½ to 5 months).

This same monkey aborted a second foetus in March 1958, and the clinical history of the case is described. The serum of the foetus agglutinated both *Brucella melitensis* and *Br. abortus* in a titre of 1:250. The possibility that the abortions were associated with brucellosis is discussed.

AWAD, N. A. (1959). Serum protein electrophoresis in brucellosis.—*Trans. R. Soc. trop. Med. Hyg.* 53, 83-90. [Author's summary modified.] 2021

Quantitative fractionation of the serum proteins was carried out in brucellosis by paper electrophoresis. The changes in the serum protein fractions were followed in human cases of *Br. melitensis* infection, either in the acute or relapse stages. These changes were also studied in g. pigs infected i/m with *Br. abortus*, and the results compared with controls. In each case the presence (or absence) of the infection was confirmed by blood culture and/or serum agglutination test.

After infection with brucella, there was little change in the level of the total serum proteins with the progress of the disease. The albumin fraction showed some decrease as the disease became chronic. The α -globulin fraction rose during the acute stage, but returned to normal in the chronic stage; the β -globulin fraction showed a change in the opposite direction. There was a rise in the γ -globulin fraction with the advance of the infection, whereas the albumin/globulin ratio showed a fall. The significance of these findings is discussed.

BENELLI, S. & DE FELIP, G. (1958). Osservazioni sul grado di resistenza per il derma del coniglio di alcuni stipiti di brucelle e delle loro mutanti antibiotico-resistenti. [Skin sensitivity to brucella strains and their antibiotic-resistant variants in rabbits.]—*G. Batt. Virol. Immun.* 51, 115-122. [Summaries in English, French and German.] 2022

The skin lesions produced by brucella strains and their antibiotic-resistant variants were identical but differed in their course. Those produced by large doses of sensitive strains tended to decrease while those produced by smaller doses tended to increase in time. *Br. melitensis* and *Br. abortus* were equally virulent while *Br. suis* was less so. Results obtained were studied statistically. There were no biochemical differences between sensitive strains and their resistant variants.—T.E.G.R.

I FERENČÍK, M., KRČMÉRY, V. & NIŽNÁNSKY, F. (1958). Vplyv antibakteriálnych látok na metabolizmus brucelových kmeňov. VII. Účinok neomycínu. [Effect of antibiotics on the metabolism of brucella strains. VII. Neomycin.] — *Vet. Čas.* 7, 454-461. [In Slovak. Summaries in English, French, German and Russian.] 2023

II. KRČMÉRY, V., FERENČÍK, M. & NIŽNÁNSKY, F. (1958). Vplyv antibakteriálnych látok na metabolizmus brucelových kmeňov. VIII. Účinok viomycínu. [Effect of antibiotics on the metabolism of brucella strains. VIII. Viomycin.] — *Ibid.* 462-467. [In Slovak. Summaries in English, French German and Russian.] 2024

I. Neomycin affected metabolism and endogenous respiration in 20 strains of *Brucella abortus*, *Br. melitensis* and *Br. intermedia*, but not *Br. suis*. Strains of low susceptibility to neomycin either did not utilize l-serine at all or only to a very small extent. Amino-acid metabolism was more inhibited than that of sugar and Krebs cycle compounds.

II. Viomycin had no effect on endogenous respiration and utilization of glucose, pyruvate, alanine, asparagine and serine. *Br. suis*, however utilized alanine and asparagine. With regard to glucose utilisation by *Br. abortus*, viomycin had a synergic effect on neomycin, streptomycin and chloramphenicol, but in *Br. melitensis* its effect on the action of neomycin and bacitracin was indifferent, on that of chlortetracycline and chloramphenicol, antagonistic. Its effect on the action of streptomycin was additive, but not synergic. The possible use of these

findings for the typing of brucella was discussed. [For the effect of other antibiotics, see V.B. 23, 3872-3877.]—E.G.

TUDORIU, C. D., ANDREI, M., DRĂGHICI, D. & MOLDOVEANU, P. (1958). Studiu asupra epididimitei berbecilor. [Epididymitis of rams.] — *Anu. Inst. Pat. Igien. anim. București* 8, 5-22. [In Roumanian. Summaries in French and Russian.] 2025

The clin. picture was described of epididymitis in 48 of about 1000 rams of various breeds, in Roumania. Two strains of an organism were isolated, which resembled *Brucella ovis*. Morphological, cultural and biochemical characteristics of these two strains were described in detail. Among other organisms isolated were three strains of *Streptococcus pyogenes*, two of *Pseudomonas pyocyanea*, two resembling *Pasteurella haemolytica* and one resembling *Past. mastitidis*.—E.G.

BOGDAN, J., BELÁK, M., PAUER, T. & KOČIŠ, J. (1957/58). Príspevok k štúdiu RES pri infekčnej epididymitide baranov. [Study of the reticulo-endothelial system in ovine infectious epididymitis.]—*Folia vet., Košice* 2, 39-49. [In Slovak. Summaries in English, German and Russian.] 2026

Apart from testes and epididymes, the authors examined liver, spleen, lymph nodes and lungs of 100 rams with infectious epididymitis and compared lesions with those in 14 experimentally infected g.pigs, 7 rabbits, 3 bulls, 16 sheep, and 4 boars, one of which had spontaneous epididymitis. In 90 rams there was concurrent infestation with lungworms, liver fluke, cysticercus and oesophageal and myocardial sarcosporidiosis. A salient feature was hyperplasia of reticuloendothelial cells in nearly all organs. Three phases of the disease were discernible. The exudative phase was characterized by necrosis with perivascular mononuclear infiltrations in testes, epididymes, liver, spleen and lymph nodes. A feature of the second stage was tubercle-like granulomata in liver, testes, epididymes and lungs, which were composed of lymphoid and epithelial cells, monocytes and giant cells. The third stage was characterized by atrophy, sclerosis, cirrhosis and sometimes calcification.—E.G.

ZADARA, V. I. (1956). [Action of microcide on brucella and some related bacteria.]—*Nauch. Trud. Ukrain. Inst. exp. Vet.* 23, 77-83. [In Russian.] 2027

Microcide is an antibiotic first described in 1950 by N. M. Pidoplichko and V.I. Bilai. In

1955 the present author studied its action on normal g.pigs, calves and cows and concluded that it was not toxic at stated doses [*Nauch. Trud. Ukrain. Inst. exp. Vet.* 22, 267-273]. Zadara's article does not give details of the source or composition of the drug except that it was a slightly yellow fluid which retained its activity in sealed ampoules for 6 months, and for 5-7 days in opened ampoules. Tests *in vitro* revealed that microcide had a pronounced antibacterial action on all three types of brucella and on *Staph. aureus*, *Str. haemolyticus*, *E. rhusiopathiae*, *S. enteritidis* and *B. subtilis*.—R.M.

LIPANOWICZ, J. & ZWIERZCHOWSKI, J. (1958). Badania nad obecnością przeciwciał leptospirowych w ogniskach niedokrwistości zakaźnej koni (N.Z.K.). [Presence of leptospiral antibodies in horses in infectious anaemia regions.] — *Weterynaria, Wrocław* No. 4. pp. 47-68. [In Polish. Summaries in English and Russian.] 2028

Investigations were carried out over 3 years on 4 farms and in 2 studs where outbreaks of E.I.A. were recorded. Out of 165 horses examined infectious anaemia was confirmed in 12 and suspected in 9. In each of these 2 groups 3 horses had a positive titre: (1) two 1:400 and one 1:6,400, (2) one 1:800 and two 1:400. The most common serotypes were *L. grippotyphosa*, *L. icterohaemorrhagiae* and *L. sejroe*. The high titres could not be correlated with any clinical symptoms or haematological findings and the authors are of the opinion that these animals had either recovered from a symptomless infection or constituted subclinical cases.—M. GITTER.

SOVA, Z. (1958). Hepatitis acuta u koně, vyvolána leptospirou ballum. [Acute hepatitis in horses caused by *Leptospira ballum*.] — *Vet. Čas.* 7, 447-453. [In Czech. Summaries in German and Russian.] 2029

S. described the clin. picture of enzootic hepatitis in a horse accompanied by fever and nervous symptoms. The sedimentation rate was increased and the number of neutrophils was at first relatively high. Liver biopsy the tenth day after onset of symptoms revealed regenerative changes. During convalescence, which took two months, the number of lymphocytes was temporarily increased. On the 15th day from the appearance of the first signs, but not before, the horse yielded titres of 1:3,200 against *L. ballum*. *L. ballum* was not recovered from the urine.—E.G.

GUIDA, V. O. & BARROS, W. M. (1958). Pesquisa de aglutininas e lisinas anti-lepto-

spira, em sôros de bovinos aparentemente normais, sacrificados no matadouro. [**Leptospira antibodies in apparently normal slaughter cattle.**] — *Biológico* 24, 26-27. [Summary in English.] 2030

Serum samples from 88 slaughter cattle were subjected to the agglutination-lysis test for leptospire. Of these two were positive for *L. pomona* and one for *L. bataviae* at 1/300.

—T.E.G.R.

LANGHAM, R. F., MORSE, E. V. & MORTER, R. L. (1958). **Pathology of experimental ovine leptospirosis, *Leptospira pomona* infection.**—*J. infect. Dis.* 103, 285-290. [Authors' summary modified.] 2031

The most extensive lesions were observed in the kidneys. There were macroscopic greyish-white circumscribed foci and streaks measuring from 1 to 4 mm. in diameter. Microscopically these areas were characterized by infiltrations of lymphocytes, some plasma cells and a few macrophages.

The c.n.s. of 5 lambs showed one or more of the following: lymphocytic infiltration in meninges and brain, haemorrhage, new capillary formation and focal increase of microglial and oligodendroglial cells.

MICHNA, S. W. (1959). **The isolation of *Leptospira canicola* from the kidney of a pig.** — *Vet. Rec.* 71, 70-72. [Author's summary modified.] 2032

L. canicola (Strain 1078) was isolated from the renal tissue of one of 14 slaughter pigs. The main characteristics of the organism are described and details are given of the procedure which led to its isolation. Serological evidence of the infection was found in the other 13. The relationship of porcine leptospirosis to human infection by *L. canicola* is discussed.

GERHARDT, M. R. & BALL, M. G. (1959). **Amino acid utilization by *Leptospira canicola*.** — *J. Bact.* 77, 17-22. [Authors' summary modified.] 2033

Utilization of glycine, lysine, tryptophan, arginine, aspartic acid, methionine, serine, and phenylalanine by *L. canicola* cultivated in Schüffner's medium was demonstrated by microbiological assays on samples of medium at various intervals during a 48-hour incubation period. The samples were also examined for amino-acids by paper chromatography and the results of the two methods compared.

WINTER, H. (1959). **Noma in the dog: report of one case, and review of oral fuso-spirochaetal infections.**—*Aust. vet. J.* 35, 1-6. 2034

This is the first report of the occurrence in Australia of noma [gangrenous sore mouth] in a dog. The macroscopic and microscopic appearances of the lesions are described.—A. CULEY.

IMAI, N., HASEGAWA, S., KAMIMURA, T., TABUCHI, K., MATSUMOTO, Y. & NISHIMURA, M. (1958). [**Studies on an infectious disease of dogs characterized by haemorrhagic enteritis. I. The aetiological significance of atypical *Clostridium welchii*.**]—*Bull. Azabu vet. Coll., Japan* No. 5. pp. 11-36. [In Japanese. Abst. from English summary.] 2035

The disease occurs in May–August in the district of Sagami-hara and affects dogs over five months of age. It may be acute or chronic and is characterized by fever, haemorrhagic enteritis and gas gangrene of the legs. P.M. findings include haemorrhages in the small intestine, necrosis of the liver, swelling of the spleen, gelatinous oedema of the thyroid and incomplete coagulation of the blood. An organism, considered to be an atypical strain of *Cl. welchii*, was isolated from the faeces, organs and lesions of affected dogs and the disease was reproduced in dogs and lab. animals by s/c inj. of the organism. Mode of infection and diagnosis are discussed.

—T.E.G.R.

LEN'KOV, V. I. & BYCHENKO, B. D. (1958). [**Demonstration of the epsilon toxin of *Clostridium welchii* Type D in the intestines of sheep with enterotoxaemia.**]—*Veterinariya, Moscow* 35, No. 11. pp. 22-25. [In Russian.] 2036

A toxin, lethal for lab. animals, was demonstrated in the contents of the small intestine of sheep that had died from infectious enterotoxaemia. It was neutralized by immune serum against the toxin of *Cl. welchii* Type D, but not by immune sera against Types A, B, C, or F or against *Cl. oedematiens*, *septicum*, or *histolyticum*. Serum from sheep immune to the disease neutralized only the epsilon toxin of *Cl. welchii* Type D, and toxin obtained from the intestine of sheep that had died from the disease. Three strains of *Cl. welchii* Type D were isolated from intestinal contents of sheep that died in the outbreak.—M.G.G.

SMITH, L. D. & MATSUOKA, T. (1959). **Maternally induced protection of young lambs against the epsilon toxin of *Clostridium perfringens* using nonactivated vaccine.** — *Amer. J. vet. Res.* 20, 91-93. [Authors' summary modified.] 2037

A single injection of unactivated *Cl. welchii* vaccine in 16 pregnant ewes induced satisfactory

titres of antitoxin in 18 of their 24 lambs. Two injections of unactivated vaccine in 9 ewes, the first in early life and the second in pregnancy 3 years later, induced satisfactory titres in 10 of their 11 lambs. The titres of antitoxin in colostrum and in ewes' sera were higher in the group given two injections. Most lambs retained protective titres of antitoxin for 12 weeks.

SMITH, H. WILLIAMS. (1959). The effect of the continuous administration of diets containing tetracyclines and penicillin on the number of drug-resistant and drug-sensitive *Clostridium welchii* in the faeces of pigs and chickens.—*J. Path. Bact.* 77, 79-93. [Author's summary modified.] 2038

Examination of the faeces of pigs and chickens kept under ordinary conditions on many premises revealed lower numbers of lecithinase-producing *Cl. welchii* in the faeces of those fed on diets containing either tetracyclines or penicillin.

In chickens, higher dietary levels of tetracycline were much more effective than lower levels in suppressing *Cl. welchii*.

In the faeces of 58.4% of piglets early-weaned on to diets containing tetracyclines, all the *Cl. welchii* were tetracycline-resistant. The corresponding figure for older pigs was 17.5%. Small numbers of the tetracycline-resistant organisms were also found in the faeces of pigs and piglets not fed tetracyclines; this and other evidence indicates that the situation in some of the tetracycline-fed herds had arisen through selection. Only 5% of the tetracycline-fed chickens had a faecal population of *Cl. welchii* that was predominantly tetracycline-resistant. These observations are compared with the *E. coli* faecal flora of these tetracycline-fed animals, which was predominantly tetracycline-resistant in 94.5% of the pig faecal specimens and in 88.7% of the chicken specimens.

A high proportion of tetracycline-resistant *Cl. welchii* was found in the faeces of piglets whose mothers were fed on diets containing tetracyclines.

Infection experiments indicated that tetracycline-resistant and tetracycline-sensitive *Cl. welchii* had a similar degree of virulence for mice. Oxytetracycline, but not penicillin, was valueless in treating mice experimentally infected with the tetracycline-resistant clostridia, but infections were successfully treated with oxytetracycline. No *Cl. welchii* resistant to penicillin or chloramphenicol were found in any of the faecal samples examined in this survey.

HELMY, N. (1958). Experimental clostridial infection in dogs.—*Tijdschr. Diergeneesk.*

83, 1089-1096. [In English. Summaries in Dutch, French and German. Author's summary modified.] 2039

Experiments on 34 dogs revealed that dogs were highly susceptible to *Cl. septicum*. Penicillin administered before, simultaneously with, or within 12 hours of inoculation controlled the infection. Dogs were highly refractory to *Cl. chauvoei* infection.

AMBROSIONI, P. & BISBINI, P. (1958). Due metodi per l'identificazione *in vitro* del bacillo tetanico. [Two methods for *in vitro* identification of *Clostridium tetani*.]—*Boll. Ist. sieroter. Milano* 37, 39-55. [Summary in English.] 2040

The methods are based on a chromatic reaction obtained by adding ferrous sulphate, alone or in combination with cysteine, to broth cultures containing small pieces of cooked liver. The reaction consists in the formation of a clear zone just above the pieces of liver and the formation of dark rings. This is considered to be specific for *Cl. tetani*; it does not occur with other clostridia. The test is not reliable for the detection of *Cl. tetani* in mixed culture.

—T.E.G.R.

NASR, S. E. (1958). Der Nachweis und die hygienische Bedeutung anaerober Sporenbildner im Oberflächenwasser. [Demonstration and hygienic importance of anaerobic spore-forming organisms in surface water.]—*Inaug. Diss., Giessen* pp. 54. 2041

Water samples were collected from rivers at 20 sites around Giessen and were cultured for anaerobes on 3 media, using a membrane filter technique. The commonest clostridia were *Cl. emphysematosum* [= *Cl. welchii*] and *Cl. sporogenes*. Less common were *Cl. fesceri* [*chauvoei*], *botulinum*, *septicum*.—R.M.

WINTER, A., SIMON, J. & McNUTT, S. H. (1959). Studies on the vaginal-mucus tube-agglutination test for the diagnosis of bovine vibriosis.—*Cornell Vet.* 49, 70-74. [Authors' summary modified.] 2042

Of three strains of *V. fetus* evaluated as antigens for use in the vaginal-mucus tube agglutination test for field diagnosis, two were considered sufficiently sensitive and specific in their reactions. The vaginal-mucus test was considered a useful herd test when interpreted in conjunction with clinical findings.

RISTIC, M. & BRANDLY, C. A. (1959). Characterization of *Vibrio fetus* antigens. I. Chemical properties and serological activities of a soluble antigen. II. Agglutination of poly-

saccharide-sensitized sheep erythrocytes by specific antisera.—*Amer. J. vet. Res.* **20**, 148-153 & 154-161. [Authors' summaries modified.] **2043**

I. A heat-stable, water-soluble substance, termed "HS", apparently partly polysaccharide in nature, was isolated from smooth *V. fetus* cells of bovine origin. Its carbohydrates yielded only pentoses on hydrolysis. Seven amino-acids were identified in it. It contained 14% nitrogen and 6.5% phosphorus. Immunological reactivity was demonstrated by production of agglutinating antibody in rabbits and g.pigs. It was serologically active in gel precipitation tests and was capable of inhibiting a specific agglutination reaction.

II. A haemagglutination test was developed for detecting antibody against *V. fetus*. Sheep erythrocytes sensitized with a polysaccharide fraction of *V. fetus* were agglutinated by specific sera produced in rabbits and by sera of naturally infected bulls. Fraction HS apparently represents a type-specific O antigen common to a number of individual strains, rather than a species-wide antigen. The specificity of the haemagglutination reaction was shown by its inhibition by the free polysaccharide. Some advantages, characteristics, and principles of the haemagglutination test are discussed.

MORGAN, W. J. B. (1958). **The sensitivity of *Vibrio fetus* to streptomycin and the emergence of resistant mutants.**—*J. gen. Microbiol.* **19**, 517-521. [Author's summary modified.] **2044**

Forty-five strains of *V. fetus* were examined for streptomycin sensitivity; in most growth was inhibited by concentrations ranging from 0.5 to 20 µg./ml. Streptomycin resistance was found in 6 strains. By the replica plating technique it was shown, in one strain, that resistance was due to spontaneous mutation which occurred in the absence of streptomycin.

HARRISS, S. T. (1958). **Foot-rot in sheep. A comparison of treatment with formalin, oxytetracycline and chloramphenicol.**—*Vet. Rec.* **70**, 914-916. [Author's summary modified.] **2045**

A comparison of treatments for contagious foot rot in sheep between 10% formalin as a bath, oxytetracycline ointment and chloramphenicol 10% tincture, showed a slight advantage for chloramphenicol 10% tincture in the early stages of treatment, and a trend in favour of oxytetracycline in the middle stages. At the end of the period of observation there was little

to choose between the three methods of treatment. The costs of treatment with the three substances are compared.

SKARNES, R. C., ROSEN, F. S., SHEAR, M. J. & LANDY, M. (1958). **Inactivation of endotoxin by a humoral component. II. Interaction of endotoxin with serum and plasma.**—*J. exp. Med.* **108**, 685-699. [Authors' summary modified.] **2046**

A humoral substance which inactivates endotoxin *in vitro* was distinguishable from complement, properdin, and specific antibody. For the present, it is designated "endotoxin-detoxifying component" or EDC.

Animal species could be grouped in three categories with regard to the EDC activity of their sera; rat serum was highly potent; chimpanzee, dog, horse and guinea pig sera were much less active; and mouse, rabbit, and sheep sera inactive. In contrast to the variations of EDC potency in serum, citrated plasma from all species manifested high potency of about the same magnitude.

The influence of time, temperature, pH, and concentration of reactants on the inactivation of endotoxin by EDC was examined. EDC activity in plasma and serum was labile to heating at 56°C. for 1 hour. Bacterial endotoxins, derived by different isolation procedures from smooth and rough Gram-negative species, varied considerably in susceptibility to EDC action.

RHOADES, H. E. & VANDEMARK, N. L. (1958). **Survival of *Brucella abortus*, *Leptospira pomona*, and *Vibrio fetus* in the Illini variable temperature semen extender at 29°C.**—*Amer. J. vet. Res.* **19**, 976-978. **2047**

Cultures of *Br. abortus*, *V. fetus* and *L. pomona* were added to semen in the Illini variable temp. diluent before transference to ampoules. The diluent contained 0.003 g. sulphanilamide, 500 i.u. penicillin and 500 µg. dihydrostreptomycin sulphate per ml. The organisms could not be re-isolated even when the ampoules were opened immediately after sealing and the contents centrifuged and cultured. *Br. abortus* and *V. fetus* were re-isolated after 96 hours at 29°C. in the diluent without sulphanilamide and antibiotics, but *L. pomona* was isolated only if cultures were made immediately after the ampoules were sealed.—M.G.G.

HAMDY, A. H. & POUNDEN, W. D. (1959). **Experimental production of pneumonia in lambs.**—*Amer. J. vet. Res.* **20**, 78-83. [Authors' summary modified.] **2048**

41 lambs were exposed to a virus, to pleuro-

pneumonia-like organisms, and to *Pasteurella septica*, all isolated from pneumonic lesions of lambs. A combination of any two of the three agents caused a febrile response in 5 of 7 lambs but no pneumonic lesions. None caused pneumonia when given singly. A combination of the three agents produced pneumonic lesions in 2 of 4 lambs. When stress was applied with two or three agents, all of 7 lambs developed both clinical signs and lesions of pneumonia. Stress alone did not cause pneumonia.

HAMDY, A. H. & SANGER, V. L. (1959). **Characteristics of a virus associated with lamb pneumonia.**—*Amer. J. vet. Res.* **20**, 84-86. [Authors' summary modified.] **2049**

A virus recovered from pneumonic lesions in a lamb was propagated in ovine kidney tissue culture cells. No cytopathogenic changes were seen, but intracytoplasmic inclusion bodies developed by the seventh day. The virus caused pneumonia in mice when instilled intranasally. Chick embryos were susceptible and died within 3-9 days. The virus passed Seitz sterilizing pads and Selas No. 02 filters, but was retained by Selas No. 03 filters. Antibodies against psittacosis virus were demonstrated in the serum of turkeys inoculated with the virus.

HAMDY, A. H., POUNDEN, W. D. & FERGUSON, L. C. (1959). **Microbial agents associated with pneumonia in slaughtered lambs.**—*Amer. J. vet. Res.* **20**, 87-90. [Authors' summary modified.] **2050**

Pasteurella haemolytica and *Past. septica* were isolated from the throat of 28 of 41 apparently healthy lambs and 23 of their 36 dams. Pneumonic lesions were found P.M. in 14 of the 41 lambs and 10 of these had harboured *Pasteurella* in the throat during the nursing period. The dams may transmit the organisms to the lambs, which in turn may induce mastitis in their dams. *Pasteurella*, pleuropneumonia-like organisms, and a viral agent were associated with pneumonic lesions in lambs at slaughter.

TALANTI, S. (1959). **Observations on pyometra in dogs, with reference to the hypothalamic-hypophysial neurosecretory system.**—*Amer. J. vet. Res.* **20**, 41-43. [Author's summary modified.] **2051**

The hypothalamic-hypophyseal systems of 6 bitches with pyometra and 10 healthy control bitches were studied, using Gömöri's aldehyde-fuchsin method. The amount of neurosecretory material had decreased in some parts of the neurosecretory system in bitches with pyometra.

The connection of this condition with the eventual disturbance in the secretion of the principles of the posterior lobe was discussed.

LINGEN, C., ERNST, L. & LINDBERG, O. (1959). **The promoting effect of lycopene on the non-specific resistance of animals.**—*Exp. Cell Res.* **16**, 384-393. **2052**

The red pigment of tomato, lycopene, when injected into animals, induces a marked increase of their non-specific resistance according to a pattern similar to that previously found with the *Streptococcus lactis* factor.—R.M.

SNEATH, P. H. A. & COWAN, S. T. (1958). **An electro-taxonomic survey of bacteria.**—*J. gen. Microbiol.* **19**, 551-565. [Authors' summary modified.] **2053**

A taxonomic survey of a wide range of bacteria was made with the aid of an electrical computing machine. The strains examined fell into five main groups: (1) Gram-positive; (2) Gram-negative; (3) *Corynebacterium diphtheriae*; (4) acidfast bacilli; (5) spirilla.

Within group 1 were subgroups representing *Streptococcus*, *Micrococcus* and *Staphylococcus*. Within group 2 were sub-groups representing: (a) most enterobacteria together with *Pasteurella pestis* and *Vibrio*; (b) *Brucella*, *Neisseria* *Actinobacillus lignieresii*, *Pasteurella septica* and possibly also *Shigella*; (c) pseudomonads; (d) *Bacillus*; (e) *Chromobacterium violaceum* and (f) *Proteus*.

The taxonomy suggested by this study is compared with that in current use. Temporary working type strains of most of the species are suggested for use in surveys of this kind. The limitations of the method and of using old laboratory records are discussed.

JELÍNEK, V. & MESÁROŠ, E. (1959). **Plíšňové pseudomalleózní afekce. [Mycotic affections resembling glanders.]**—*Sborn. čes. Akad. zemědělsk. Věd., vet. Med.* **4** (32), 1-14. [In Czech. Summaries in English, German and Russian.] **2054**

Lesions in the hyperaemic mucous membrane of the nasal septum of two horses macroscopically resembled those of glanders. In one horse lesions appeared 3-5 days after straw affected with an unidentified black smut had been used for bedding and feeding. Histologically tissue reactions included proliferations of granulation tissue, stated to be characteristic for fungal infections. Illustrations include pictures of affected nasal septa, liver with milinary and smaller nodules of mycotic origin, photomicrographs of conidia in striated muscle and sub-

mucosa, and of conidiospores and spore-bearing hyphae in liver cells. Bacterial contaminants isolated from the two horses included *Pseudomonas pyocyanea*, *Corynebact. pyogenes*, *Staphylococcus pyogenes albus* and *Proteus vulgaris*.

—E.G.

- ✓ GITTER, M. & AUSTWICK, P. K. C. (1959). **Mucormycosis and moniliasis in a litter of sucking pigs.**—*Vet. Rec.* 71, 6-11. [Authors' summary modified.] 2055

An outbreak of gastric mucormycosis in a litter of 2- to 13-day-old piglets and an unrelated case in a 2- to 3-week-old pig are described. *Rhizopus microsporus* was isolated from the stomach lesions and from the bedding. Concurrent infection of *Candida albicans* was present and the yeast was recovered from oral and oesophageal lesions, and from bedding, drinking water, and air in the pen. No lesions of moniliasis were found in the unrelated case although *C. tropicalis* was isolated in quantity from the stomach.

- ✓ MACKINNON, J. E. (1959). **A yeast in the stomach of the mouse.**—*Mycopathologia* 10, 207-208. [In English. Author's summary modified.] 2056

The high incidence (100%) of *Torulopsis pintolopesi* in the stomach of the mouse and the absence of any type of inflammatory response show an adaptation between the yeast and the mouse. This is in agreement with the opinion of Parle (1957) that the yeast belongs to the normal flora of the digestive tract.

- ✓ KEENEY, E. L. & HUPPERT, M. (1959). **Immunization against superficial fungous infection. I. Studies on experimental animals.**—*J. invest. Derm.* 32, 7-13. 2057

A vaccine was prepared from broth cultures of *Trichophyton mentagrophytes*, employing techniques designed to minimize destruction of antigen. This material was incorporated into an ointment which was rubbed into a shaved area on the side of g.pigs. Treated animals developed hypersensitivity and increased resistance to infection with the fungus, which persisted for at least a month.—R.M.

- DOBEK, M. (1959). **Action de l'isoniazide sur *Nocardia asteroides* in vitro et in vivo. [Action of isoniazid on *Nocardia asteroides*.]**—*Ann. Inst. Pasteur* 96, 116-119. [English summary modified.] 2058

The strains studied are completely inhibited by high concentrations of isoniazid (2,500 to 5,000 $\mu\text{g./ml.}$) However, one strain, different from the type species, is completely inhibited

by 156 $\mu\text{g./ml.}$ The partially inhibiting concentrations vary according to the strains between 40 and 2,500 $\mu\text{g./ml.}$

Isoniazid does not influence the course of experimental nocardiosis, nor presence of the fungus in organs. There is a relationship between the pathogenicity of the strains and their sensitivity to isoniazid.

All the strains studied are catalase-positive. The oldest cultures are the least active. No loss of catalase activity has been noticed in strains in the presence of isoniazid.

- ČOLLÁK, D. & ORSÁG, A. (1957/58). **Klinické skúsenosti s liečením aktinomykózy mäkkých častí (aktinobacilózy) streptomycínom. [Treatment of actinobacillosis of the soft tissues with streptomycin.]**—*Folia vet., Košice* 2, 183-190. [In Slovak. Summaries in English, German and Russian.] 2059

Pus formation ceased and granulomata due to *Actinobacillus lignieresii* infection in the parotid gland, the laryngo-pharyngeal region and the tongue in seven cattle, gradually disappeared, following 2-4 i/m inj. at intervals of 56 hours, of 5 mg./kg. body wt. each, of streptomycin. One cow, in which clin. diagnosis of actinobacillosis was not confirmed bacteriologically, resisted treatment.—E.G.

- FANG HSIAO-WEN, YÜ KUANG-HSI & LIU KUANG-PEN. (1958). **[Studies on the transmission of caprine pleuropneumonia and the preservation of the virus.]**—*Acta vet. zootech. sinica* 3, 53-59. [In Chinese. Abst. from English summary.] 2060

Infective material from goats with contagious pleuropneumonia was inoculated into healthy goats by s/c, i/m, i/v or intratracheal inj.; other goats were placed in contact with infected goats or were made to inhale an aerosol of infective material. Intratracheal inoculation killed 95% of goats after an incubation period of 3-7 days: the minimum infective dose of fresh lung was 0.004 mg. while that of freeze-dried lung was 4 mg. Infective lung material retained its virulence for 20 days at 16°C. or 24 days when stored with glycerin at 2°. Freeze-dried tissue retained its virulence for 49 months when stored at 2° to 8°C.—R.M.

- FANG HSIAO-WEN, YÜ KUANG-HSI & LIU KUANG-PEN. (1958). **[Studies on the preparation and the immunizing potency of aluminium hydroxide adsorbed tissue vaccine of caprine pleuropneumonia.]**—*Acta vet. zootech. sinica* 3, 44-52. [In Chinese. Abst. from English summary.] 2061

The vaccine was prepared from lung tissue

by the method of Polkovnikova *et al.* [V.B. 23, 2789]. It protected goats for 14 months, and controlled losses when inoculated at the beginning of outbreaks. In addition, five lots of vaccine were prepared from pleural exudate, but only 3 were effective.—R.M.

HAMDY, A. H., SANGER, V. L. & GALE, C. (1958). The use of erythromycin in the treatment of infectious turkey sinusitis during a

natural outbreak. — *Avian Diseases* 2, 250-257. 2062

In an outbreak of infectious sinusitis due to pleuropneumonia-like organisms in a flock of 18,000 poults, erythromycin glucoheptonate at a level of 100 mg. per sinus was 88% effective in promoting clinical recovery. At lower levels, the rate of recovery was in direct proportion to the dosage of erythromycin used, but all treated groups showed a reduced death rate.

—A. ACKROYD.

See also *absts.* 2111 (*E. coli* vaccine and leucocyte regulation in pigs with swine fever); 2143 (cockroaches as vectors of diseases); 2304-2305 (reports, Canada); 2306 (report, New Zealand); 2307 (report, Netherlands).

DISEASES CAUSED BY PROTOZOAN PARASITES

CULBERTSON, C. G., SMITH, J. W., COHEN, H. K. & MINNER, J. R. (1959). Experimental infection of mice and monkeys by *acanthamoeba*.—*Amer. J. Path.* 35, 185-197. 2063

The authors amplified their previous observations on this subject [V.B. 29, 1506.].—R.M.

WOLSTENHOLME, B. & GEAR, J. (1958). Immunological distinction between *Trypanosoma rhodesiense* and *Trypanosoma brucei*. — *S. Afr. med. J.* 32, 1216. [Authors' abst. modified.] 2064

Apart from its academic interest, the practical significance of distinguishing between these parasites was revealed in 1952 when a human laboratory infection occurred which was alleged to be *T. brucei*.

Having these 2 strains adapted to growth in embryonated eggs, and antigen prepared in rabbits from infective g.pig blood, slide agglutination tests were carried out and examined by high-power, darkground illumination. For one strain the agglutination titre was 1:20 and in the other 1:20,480. In addition the sera of 4 patients with sleeping sickness were tested. Similar results were obtained. These sera were also tested against the r.b.c. of chick embryos infected with *T. rhodesiense* and *T. brucei*, and it was noted that while those infected with *T. rhodesiense* were agglutinated those infected with *T. brucei* were not. This finding suggests that a specific agglutinating substance derived from the trypanosomes was absorbed by the red cells.

Recently Soltys, using a trypanosome-agglutination technique, has also distinguished these 2 strains.

LEE, R. P. & ARMOUR, J. (1959). The coccidia oocysts of Nigerian cattle.—*Brit. vet. J.* 115, 6-17. [Authors' summary modified.] 2065

An account of a survey in which 11 recognized species were found: these

were classified on morphological grounds as *Eimeria subspherica*, *E. alabamensis*, *E. ellipsoidalis*, *E. cylindrica*, *E. zürni*, *E. bovis*, *E. canadensis*, *E. braziliensis*, *E. auburnensis*, *E. wyomingensis*, and *E. bukidnonensis*. The findings were compared with those of other workers.

SVANBAEV, S. (1958). Les animaux sauvages ongulés du Kazakhstan comme vecteurs des coccidies des animaux domestiques. [Wild ungulates as vectors of *Eimeria* parasites of domestic animals.] — *Bull. Off. int. Epiz.* 49 bis, Nos. 11-12 pp. 403-407. [In English. pp. 408-412.] 2066

Six species of wild ungulates in Kazakhstan were examined for coccidia. A new species, *Isospora capreoli*, was described in the roe deer (*Capreolus capreolus*). The saiga antelope (*Saiga tatarica*) carried four species of *Eimeria* (*E. ninae-kohl-yakimovi*, *E. elegans*, *E. faurei* and a new species *E. saiga*). The mountain goat (*Gazella subgutturosa*) carried *E. ninae-kohl-yakimovi* and *E. elegans*. *Ovis ammon* carried *E. faurei*, *E. ninae-kohl-yakimovi* and *E. intricata*. The Central Asian goat (*Capra sibirica*) was infected with *E. faurei*, *E. ninae-kohl-yakimovi* and *E. parva*. Wild boars were infected with *E. scabra* and *E. deblicieki*. The author notes that the discovery of common species of coccidia in various ungulate animals is not sufficient in itself to justify the conclusion that natural interchange of parasites can occur between these wild animals and domestic species. [It is clear that these species of *Eimeria* were identified solely on the morphological characters of the oocysts. This is not a criterion that, under the circumstances, would be generally acceptable.]—S. BRIAN KENDALL.

ABDUSSALAM, M. & RAUF, A. (1957). Coccidia of camels. — *Proc. 9th Pakistan Sci. Conf.*,

Peshawar 1957. Part III. pp. 125-126. [Abst. from authors' abst.] **2067**

The faeces of 24 one-humped camels in Lahore were examined by concentration techniques; coccidia oocysts were found in 10 samples. Six of these were *Eimeria* (*Globidium*) *cameli* three *E. noller*i and one *E. dromedarii*. The morphology and development of these oocysts was studied. None of the infected camels showed any symptoms ascribable to infection with coccidia.

BALL, S. J. (1959). Chemotherapy of caecal coccidiosis in chickens: the activity of nicarbazin.—*Vet. Rec.* **71**, 86-91. [Author's summary modified.] **2068**

Nicarbazin at concentrations of 0.01% wt. for wt. or more in the food was effective in caecal coccidiosis produced by serial doses or by sporulated *Eimeria tenella* oocysts, when medication was commenced before infection.

At 0.025% wt./wt. or more in the food it effectively controlled caecal coccidiosis when treatment was delayed for 24 hours. If given 48 hours after infection, concentrations of 0.4 or 0.8% wt./wt. had only slight activity.

The drug did not prevent the development of immunity in chicks infected after medication had commenced.

It affected the development of the second generation schizont but its action appeared to be predominantly coccidicidal.

MUSHETT, C. W., WASHKO, F. V., KELLY, K. L. & BLOOM, A. J. (1958). A hematologic-pathologic study in chickens fed graded levels of nicarbazin.—*Poult. Sci.* **37**, 580-586. **2069**

Studies of the effects of feeding nicarbazin indicated that 0.02% in the food inhibited growth, but had no effect on blood clotting and prothrombin times. A slight anaemia occurred in birds receiving 0.08 and 0.16% in the food. Tissue changes were observed only at 0.16% (about 12 times the level recommended for use as a coccidiostat).—S. BRIAN KENDALL.

HORTON-SMITH, C. & LONG, P. L. (1959). The anticoccidial activity of glycarbylamide.—*Brit. vet. J.* **115**, 55-62. [Authors' summary modified.] **2070**

The anticoccidial activity of glycarbylamide (4, 5-imidazole dicarboxamide) was tested against (1) *E. tenella*, *E. necatrix*, and *E. acervulina* in chickens and (2) *E. meleagritidis* in turkeys.

The drug was effective in protecting chickens from heavy experimental infections with *E. tenella* and *E. necatrix* but was inferior to sulphaquinoxaline in reducing the oocyst-pro-

duction of *E. acervulina* when continuous treatment was started before infection with oocysts. Experimentally-induced intestinal coccidiosis in turkeys caused by *E. meleagritidis* was not prevented by glycarbylamide, nitrofurazone or nicarbazin. Complete protection was given by sulphaquinoxaline.

MOREHOUSE, N. F. & MCGUIRE, W. C. (1958). The pathogenicity of *Eimeria acervulina*.—*Poult. Sci.* **37**, 665-672. **2071**

E. acervulina is a common species in poultry. Its pathogenicity has usually been regarded as slight. In these experiments up to 75% mortality was obtained by doses of 5 million or more oocysts, a number which might be voided in 1 g. of faeces from an infected chick. Infection can be followed by a severe inflammatory reaction of the intestinal mucosa. It is suggested that sublethal infection causes great loss under commercial conditions because extreme emaciation is characteristic. Heavily infected chicks may lose 40-50% of their body weight in only four days.—S. BRIAN KENDALL.

CHAVARRIA, C., BREÑA, M. T., MOGUEL, M. & TARACENA, M. (1958). Ganaseg, un derivado de diguanil-diazo-aminobenzol en la piroplasmosis experimental de bovinos. ["Ganaseg" in experimental piroplasmosis of cattle.]—*Cienc. vet., Mexico* **3**, 564-574. **2072**

44 cattle were inoculated i/p with approx. 1,600 million erythrocytes from splenectomized calves infected with a Mexican strain of *B. bigemina*. 31 of the cattle were treated with "Ganaseg" ("Berenil") and the results confirmed that a single inoculation of the drug at 3 mg. per kg. body wt. was an effective cure. [See also *V.B.* **29**, 1332.]—R.M.

SOAVE, O. A. & LENNETTE, E. H. (1959). Naturally acquired toxoplasmosis in the gray squirrel, *Sciurus griseus*, and its bearing on the laboratory diagnosis of rabies.—*J. Lab. clin. Med.* **53**, 163-166. [Authors' summary modified.] **2073**

The brain of a gray squirrel (*Sciurus griseus*) was examined for rabies virus because the animal had behaved in an abnormal manner and had bitten a child. Microscopic examination of smear and imprint preparations of the brain was negative for Negri bodies, but structures with the typical morphological and staining characteristics of *T. gondii* were encountered. This is believed to afford at least presumptive evidence of natural infection with *T. gondii* in a squirrel.

DE ROEVER-BONNET, H. (1958). *Toxoplasma* infecties bij huisdieren en slachtvee. [*Toxoplasma* infection in domestic animals and slaughtered livestock.] — *Tijdschr. Diergeneesk.* **83**, 1073-1077. [In Dutch. Summaries in English, French and German. English summary modified.] **2074**

Serological investigation, using the Sabin-Feldman staining technique, revealed that in cats and dogs suspected of toxoplasma infection the number of positive findings in cats exceeded that in dogs, but there was no significant difference between the number of positive dogs and cats when both suspect and non-suspect animals were included.

In slaughtered cattle, pigs and sheep a number of positive reactions was found. It appeared that in spring the number of positive reactions was higher than in autumn. Proof of the specificity of the serological reactions was obtained by culture of the parasite from 4 out of 30 brains of sheep.

RAWAL, B. D. (1959). *Laboratory infection with Toxoplasma*. — *J. clin. Path.* **12**, 59-61. [Author's summary modified.] **2075**

R. described the course of his own laboratory infection with toxoplasma and reviewed 17 others. Headache, malaise, and lymphadenopathy were the commonest symptoms and signs. The need for care when working with toxoplasma is stressed.

See also abst. 2141 (oocysts in rabbit faeces).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

BABINI, A. (1958). Ricerche sulla specificità delle precipitazioni in gel di agar con il virus aftoso. [*Specificity of agar gel precipitation test for foot and mouth disease virus*.] — *Vet. ital.* **9**, 723-735. [Summaries in English, French and German.] **2077**

It was observed that in the gel precipitation test for F. & M. disease non-specific reactions may result from the diluents of gel agar used, the virus itself, the preparation of the agar plates or the serum. — T.E.G.R.

VAN BEKKUM, J. G. (1959). De differentiële diagnose van mond- en klauwzeer. [*Differential diagnosis of foot and mouth disease*.] — *Tijdschr. Diergeneesk.* **84**, 335-346. [In Dutch. Summaries in English, French and German. English summary modified.] **2078**

Vaccination has changed the epidemiological and clinical pictures of F. & M. disease in the Netherlands. The desirability of an accurate diagnosis, especially under these conditions, is

ANTHONY, D. W. & RICHEY, D. J. (1958). *Influence of black fly control on the incidence of Leucocytozoon disease in South Carolina turkeys*. — *J. econ. Ent.* **51**, 845-847. [Authors' abst. modified.] **2076**

Experiments were conducted to determine if the control of black flies (*Simulium*), vectors of *Leucocytozoon smithi*, would reduce or eradicate this disease in turkeys. Plots of about 11 and 4 sq. miles, each containing a turkey farm, were treated by aircraft with 5% DDT-oil solution to destroy black flies breeding in the streams. In the large plot good control of larvae and pupae was obtained for 4 weeks, and dry weather practically eliminated breeding during the following 8 weeks. Observations of turkey poults placed on pasture 4 weeks after treatment failed to reveal black flies, but *Leucocytozoon* infections were evident after 2 weeks' exposure. Other blood-sucking Diptera collected from the turkeys included *Culicoides* spp., *Diachlorus ferrugatus* and *Chrysops univittata*. Good control of larvae was also obtained for 4 weeks in the small plot, and dry weather kept breeding at a low level thereafter. However, pupae of *S. slossonae* and *congregatarum* were collected nearly every week of the study, and a few adults may have been available to attack the turkeys. *Leucocytozoon* infection was evident after the turkeys were exposed 2 weeks on the pasture.

pointed out. A number of disease entities which might be the cause of confusion are mentioned. Some of these are discussed in detail. The lab. methods available for the diagnosis of F. & M. disease are reviewed.

PARAF, A., ASSO, J., VERGE, J., DHENNIN, LOUIS, DHENNIN, LEONE, DICK, P. & DESMOULINS, J. (1958). Modifications de certaines propriétés biologiques du virus aphteux observées au cours de plus de cent passages chez le lapin. [*Modification of the virus of foot and mouth disease during 100 passages in rabbits*.] — *Bull. Off. int. Epiz.* **49**, 546-576. **2079**

A suspension of bovine tongue epithelium Type C (Loupoigne) virus was injected i/p into new-born rabbits. Passage was effected by i/p inj. of liver and muscle suspension up to the 70th passage and muscle alone thereafter. Observations were made on the: course of infection and rate of multiplication in relation to

the age of the rabbits and to the number of passages; virulence for cattle; antigenic properties of the adapted virus. At the 56th passage the virus was highly virulent for cattle; it was only slightly so at the 74th and 104th. Cattle inoculated with 56th and 74th passage virus were infective for other cattle; infectivity was slight or absent at the 104th passage. The virus had high type-specific antigenicity.—T.E.G.R.

KÖTSCHKE, W. (1958). Vergleichende histologische, virologische und hämatologische Untersuchungen zum Anpassungsmechanismus des Maul-und-Klauenseuche (MKS)-Virus an das Mausgehirn. [Histological, virological and haematological studies on the adaptation of foot and mouth disease virus to mouse brain.]—*Arch. exp. VetMed.* 12, 524-603. 2080

This paper gives a detailed account of investigations into the adaptation of F. & M. virus to mouse brain. Over 1,000 mice and several strains of virus were used, and the investigations included the histological changes induced, haematology, and the virus titre in blood and tissues. The strains used were:—bovine A₅, and O₂, guinea-pig general standard A, and a special g.pig standard A.

In the first few passages histological changes were not prominent, but with higher passages marked changes developed. These were initially degenerative changes in the ganglion cells of the hippocampus, the pyriform lobe and the nucleus caudatus; later the changes spread through the midbrain to the spinal cord, but not to the cerebellum. Migration of leucocytes occurred at an early stage but inflammatory changes did not occur till the mid-phase, while the terminal phase was marked by both inflammatory and degenerative changes. Changes were more severe at 3-4 weeks than at 6 weeks. Control mice injected with a bland brain suspension, or sterile isotonic buffer-phosphate solutions showed no changes from normal. In the infected animals there was a progressive increase in the number of r.b.c., and also increased Hb, with a definite leucopenia especially in the higher brain passages. In the differential count there was a progressive reduction in the lymphocytes and an increase in the neutrophils and their curves crossed within a very few hours before, or after, clinical signs of the disease became evident. This is considered a very sensitive index.

Virus estimations were made on blood, brain, and other organs including heart and skeletal muscles after intracerebral inoculation. Virus was present in the blood within 4 hours,

and in the cerebrum within 8 hours. It was also present in the heart and skeletal muscles, thus suggesting that there is a definite myotropic component. K. concluded that there is no essential difference in the histological picture in the c.n.s. between original bovine and g.pig adapted strains. The blood picture, and the histological and virological results, can be used to assess the adaptation of the virus to mouse brain. The differential blood count may be of use when investigating the adaptation of other viruses.—W. K. DUNSCOMBE.

CARTWRIGHT, S. F. & THORNE, H. V. (1959). Some applications of detergents to the study of the virus of foot-and-mouth disease.—*J. gen. Microbiol.* 20, 61-77. [Authors' summary modified.] 2081

The virus was highly resistant to sodium dodecyl sulphate (SDS), cetyl trimethyl ammonium bromide (CTAB) and Tween 80. Results are recorded which show the possibilities of using SDS in the extraction of virus from infected cells, in concentrating virus by elution from adsorbents, and in increasing yields in the filtration and ultracentrifugation of virus suspensions.

THOMAS, A. & LECLERC, J. (1959). L'acide ribonucléique infectieux du virus de la fièvre aphteuse. [Infective ribonucleic acid from the virus of foot and mouth disease.]—*C. R. Acad. Sci., Paris* 248, 606-609. 2082

A ribonucleic acid was extracted by phenol from primary aphthae in cattle or g.pigs infected with type O₂ of the virus. Treatment of intact virus with ribonuclease did not change its infectivity, but the ribonucleic acid lost its infectivity after such treatment. [See also *V.B.* 29, 695.]—R.M.

KJELLÉN, L. E. & SCHLESINGER, R. W. (1959). Influence of host cell on residual infectivity of neutralized vesicular stomatitis virus.—*Virology* 7, 236-239. 2083

Application of a plaque assay method to animal viruses has led to a theory of neutralisation kinetics in which it is assumed that the residual infectivity of a mixture of immune serum and virus is independent of the kind of host cells on which it is plated [*V.B.* 27, 457]. The present authors found a discrepancy in the residual infectivity of neutralized vesicular exanthema virus, as determined by the number of plaque-forming units by the use of chick embryo fibroblast cultures compared with cultures of "MCN" cells from leukaemic bone marrow, and they concluded that the choice of cells used for

plaque assay may affect the outcome of neutralization tests in a very significant manner.

—R.M.

FRENCH EQUATORIAL AFRICA, (1958). Rapport sur le fonctionnement technique de l'Institut Pasteur de Brazzaville en 1955. [**Report of the Pasteur Institute at Brazzaville for 1955.**] [CECCALDI, J.] pp. 115. Brazzaville: Imprimerie centrale d'Afrique. [Summary in English pp. 11-17.] **2084**

Among other matters, this report describes breakdown of immunity to rabies in a dog aged 16 months, inoculated with 40 ml. of phenolized vaccine of the Fermi type 8 months previously. The vaccine had been divided into two doses, given 48 hours apart.—R.M.

POTEL, K. (1958). Das histologische Verhalten des Zentralnervensystems bei Hunden nach Impfung mit einer eiadaptierten Lebendvaccine (Flury-Vaccine) gegen Tollwut. [**Histology of the central nervous system of dogs after inoculation of live avianized rabies virus.**] — *Arch. exp. VetMed.* **12**, 612-626. **2085**

Three groups of dogs aged 3-6 months were treated as follows. Group I (14 dogs) were given an injection of either 3.5 or 20 ml. of a 30% low-egg-passage Flury vaccine i/m and were killed 7 to 42 days later. Clinically 10 animals observed for 6 weeks showed no symptoms. One had rabies-like symptoms on the 7th day, another was killed on the 13th day because of progressive paralysis; 2 developed extensive paralysis on the 11th day but recovered.

Group II (3 dogs) were inoculated on successive days with 5, and 20 ml. They showed no clinical symptoms and were killed 20, 27, and 33 days later.

Group III (3 dogs) given 5 ml. of the same vaccine were observed for 95 days and remained in good health; they were then challenged with street virus. 20 days later one dog showed some "psychological" disturbance but recovered and with the other 2 was killed 58 days later.

The brains of all the dogs were removed for histological examination. In group I inflammatory tissue changes in the form of marked meningoencephalitis were found in the c.n.s. from the 2nd week. The inflammatory process seemed to reach a peak at the 3rd week. No Negri bodies were found.

In group II the diffuse meningoencephalitis was more severe than in group I and was more prominent in the dog killed on the 20th day than in the other 2. Again no Negri bodies were seen.

An additional note refers to dogs hyperimmunized with fixed virus to obtain high-titre serum. None showed notable c.n.s. changes when killed 4-5 months later.

In the 3 groups of vaccinated dogs the dose of vaccine did not appear to influence the degree of change in the c.n.s. and the histological findings did not agree with the clinical signs or symptoms.

P. concluded that the low-egg-passage vaccine had not lost its neurotropic character even though it was given extra-neurally, and the virus seemed to occupy an intermediate position between fixed and street viruses; the Flury vaccine was held responsible for the histological changes in the c.n.s. and the value of this vaccine was disputed. It was suggested that for future tests a vaccine of higher egg-passage should be selected.—W. K. DUNSCOMBE.

BOLIN, V. S. (1959). Survival of a guinea pig following infection with street rabies virus—A case report.—*J. Amer. vet. med. Ass.* **134**, 90-92. [Author's summary modified.] **2086**

Of 40 g.pigs inoculated with street rabies virus, 37 died. One of the 3 survivors had paralytic rabies, from which it recovered. Neutralizing antibodies against street rabies virus were demonstrated in its serum 3 months after infection.

HUYGELEN, C. & MORTELMANS, J. (1959). Attempts to immunize guinea pigs with Flury vaccine and subsequent challenge with fixed rabies virus.—*Amer. J. vet. Res.* **20**, 145-147. [Authors' summary modified.] **2087**

G.pigs, vaccinated by i/m injection of Flury vaccine, were challenged by the intracerebral (i/c) route with a strain of fixed rabies virus 8, 15, 22, or 31 days after vaccination. Resistance was negligible or absent. G.pigs vaccinated in the same way, but challenged with fixed virus by the i/m route, appeared to have better protection. Serum-neutralization tests revealed fixed virus-neutralizing antibodies in vaccinated g.pigs. These experiments indicate that challenge by i/c inoculation of fixed virus is of no value in testing Flury vaccine in g.pigs.

FRAÑO, J., BYSTRICKÝ, V. & VRTIAK, J. (1958). Vírus chrípky A anatis, kmeň "Košice 1956", izolovaný z respiračného ochorenia káčeniec. I. Štúdium morfológických vlastností. [**Influenza virus A anatis, isolated from ducks with a respiratory disease. I. Morphological study.**]—*Vet. Čas.* **7**, 411-418. [In Slovak. Summaries in English, French, German and Russian.] **2088**

An influenza A virus was isolated on chick embryos from lungs, nasal discharge and brain of ducks which had died on a farm in Slovakia from an acute respiratory infection. Its size, determined by ultra-filtration and electron microscopy was 80-100 m μ , its shape spherical.

—E.G.

BOGOCH, S., LYNCH, P. & LEVINE, A. S. (1959).

Influence of brain ganglioside upon the neurotoxic effect of influenza virus in mouse brain.

—*Virology* 7, 161-169. [Authors' summary modified.] 2089

A purified preparation of brain ganglioside inhibits the neurotoxic effect of influenza PR8 and NWS viruses *in vivo* and suppresses the development of haemagglutinins in tissue culture in concentrations comparable to those at which it inhibits the haemagglutination reaction. In mouse brain the inhibition of the neurotoxic effect may be due to a competition of added brain ganglioside with the cellular brain ganglioside for the infecting virus.

I. ŠKODA, R. & BLÁŠKOVIČ, D. (1958). Dôkaz styku domácich zvierat s vírusom kliešťovej encefalitídy v prírodnom ohnisku tejto nákazy. I. Virologická štúdia. [Demonstration of antibodies against tick-borne encephalitis in domestic animals after transfer to a natural focus of this disease. I. Virological study.]—*Vet. Čas.* 7, 515-522. [In Slovak. Summaries in English, French, German and Russian.] 2090

II. GDOVIN, T. & MAČIČKA, O. (1958). Dôkaz styku domácich zvierat s vírusom kliešťovej encefalitídy v prírodnom ohnisku tejto nákazy. II. Klinická a parazitologická štúdia. [Demonstration of antibodies against tick-borne encephalitis in domestic animals after transfer to a natural focus of this disease. II. Clinical and parasitological study.]—*Ibid.* 523-529. [In Slovak. Summaries in English, French, German and Russian.] 2091

III. FRAŇO, J. (1958). Dôkaz styku domácich zvierat s vírusom kliešťovej encefalitídy v prírodnom ohnisku tejto nákazy. III. Kolísanie hodnot bielikovinového spektra v sérach oviec a kôz. [Demonstration of antibodies against tick-borne encephalitis in domestic animals after transfer to a natural focus of this disease. III. Variation in serum protein values in sheep and goats.]—*Ibid.* 530-537. [In Slovak. Summaries in English, French, German and Russian.] 2092

I. Within eight months of the transfer of 17 goats, six kids, ten sheep and eight lambs from a district free from tick-borne encephalitis

to an endemic area in Slovakia, virus-neutralizing antibodies were demonstrated in eight goats, six sheep and one kid.

II. There was no apparent relationship between the intensity of tick infestation and clinical symptoms, nor the intensity of infestation and positive serological reactions in goats and sheep with clinical symptoms.

III. In sheep a temporary increase in α -globulin values and a permanent increase in the γ -globulin fraction, with simultaneous decrease in albumins, was demonstrated electrophoretically. In goats values remained within normal limits. Association between the changes in serum protein fractions and tick-borne encephalitis was not established beyond doubt.

—E.G.

GREŠÍKOVÁ, M. (1958). Perzistencia vírusu kliešťovej encefalitídy v mlieku a mliečnych výrobkoch. (Predbežná zpráva.) [Survival of the virus of tick-borne encephalitis in milk and milk products. Preliminary report.]—*Vet. Čas.* 7, 419-422. [In Slovak. Summaries in English, French, German and Russian.] 2093

The virus of tick-borne encephalitis survived for a considerable time in cow's milk and milk products. It retained its pathogenicity practically undiminished in butter, kept in a refrigerator for two months. [See also *V.B.* 28, 1051.]—E.G.

TRAUB, E. & SCHWÖBEL, W. (1958). Über die Leistungsfähigkeit des intracerebralen Mäusgetestes und der Gewebekultur als Methoden zum Nachweis kleinster Mengen von EEE-Virus im Gewebe. [Demonstration of small amounts of Eastern equine encephalomyelitis virus in tissues by mouse inoculation and by tissue culture.]—*Zbl. Bakt. I. (Orig.)* 173, 506-523. [Summaries in English, French, Spanish and Russian. English summary modified.] 2094

The presence of EEE virus in organs of mice infected subcutaneously was examined.

Virus could be detected in the ovaries from the first to the 96th hour after infection, less regularly in the bone marrow from the first to the 24th hour. The kidneys, the adrenals and the c.n.s. rarely yielded positive cultures. Spleen, liver and pancreas were always negative. Trypsinized cultures were generally superior to Maitland type cultures.

In many cases intracerebral inoculation into mice was more sensitive than tissue culture.

BARTHA, A. & VIZY, L. (1958). A lóinfluenza-vírus komplementumkötő antigénjének el

őállítása. [Preparation of antigen for the complement-fixation test in equine influenza.]—*Mag. állator. Lapja* 13, 277-279. [In Hungarian. Summaries in English and Russian.] 2095

The antigen was prepared from lung tissue of aborted foal fetuses. Details are given of the procedure, which takes about 4 hours and is essentially disintegration of the tissue cells with carborundum (SiC). The antigen was efficient in 1:500-1:2,000 maximal dilutions, while anti-complementary effect was observed only up to 1:10 dilution. The antigen preparation can be stored by deep-freezing.—A. SEBESTENY.

BARTHA, A., FEHÉR, D. & PLYUSIK, M. (1958). Hurutos lóinfluenza elleni immunizálási kísérlet élő vírussal. [Immunization of horses against influenza using live virus.]—*Mag. állator. Lapja* 13, 275-277. [In Hungarian. Summaries in English and Russian.] 2096

Living Hh-2 strain of the virus of equine influenza was used for the active immunization of 5 susceptible four-year-old Thoroughbred mares. Each animal responded to intrapharyngeal inoculation with 2 g. of emulsified liver tissue of aborted fetuses in saline, with a mild rise of temperature lasting for 1-3 days and with the production of antibodies: these reached their peak in the blood between the 2nd-4th weeks and disappeared between the 7th-12th month after immunization. It was proved that 8 weeks after immunization no virus excretion occurred.

14 months later the same inoculation procedure was repeated on three of the immunized and one control mare, 1-2 months before they were due to foal. The control aborted, while the immunized mares responded with antibody production.

It is suggested that mares which are exposed to influenza infection could be safely immunized by the described procedure provided it is done 2 months before they or any of their stable companions are served.—A. SEBESTENY.

BROWN, R. D. (1958). Rinderpest immunity in calves. I. The acquisition and persistence of maternally derived antibody. II. Active immunization.—*J. Hyg., Camb.* 56, 427-434 & 435-444. [Author's summaries modified.] 2097

I. Rinderpest neutralizing antibody was transferred from the immune dam to the calf via the colostrum. No antibodies were detected in the sera of calves before suckling. The colostrum of immune cows contained rinderpest antibodies to a higher titre than in the serum; 30-48

hours after the ingestion of such colostrum, newborn calves had antibody levels greater than those of their dams' sera but less than those of the colostrum.

After the neonatal period the serum titres of calves declined linearly. The mean half-life of maternally derived rinderpest antibody in calves was 36.7 days and the extinction point 10.9 months.

Two young calves (from susceptible dams) which each ingested daily for 5 weeks 1 gal. of milk containing rinderpest antibodies failed to show evidence of their absorption from the intestinal tract.

II. Calves born to rinderpest-susceptible dams were inoculated with lapinized virus when 1 day to 2 months old. Their neutralizing antibody titre 21 days later did not differ from that of adult susceptible cattle.

In calves born to rinderpest-immune cows, the serological response to caprinized virus depended upon the level of maternally derived antibody. There were two critical levels, one below which all calves produced antibodies (serum titre of 0.7 or less) and another above which no antibody was formed (serum titre of 2.2 or more). Thus all animals aged 8 months or more were actively immunized but none aged 3 months or less.

The response of calves with maternally derived antibody titres between 0.9 and 2.0 varied. There was a significant inverse relationship between the pre-inoculation titre and the amount of antibody formed during the following 3 weeks, and similarly between the pre-inoculation titre and the rate of production of antibody and its titre 1 year after inoculation.

Calves which possessed colostrum antibody, and which were actively immunized by caprinized virus inoculation, did not necessarily show the usual clinical reaction. When such animals failed to become actively immunized there was no sensitization of the antibody-forming mechanism, as demonstrated by the lack of an anamnestic response to subsequent exposure to rinderpest virus antigen.

NAKAMURA, J., KISHI, S., MATSUZAWA, H., KIUCHI, J. & MIYAMOTO, T. (1957). Inoculation experiments with attenuated strains of rinderpest virus in goats, pigs and hamsters.—*N.I.B.S. Bull. biol. Res., Tokyo* 2, 1-12. [In English. Authors' summary modified.] 2098

Goats inoculated with the lapinized-avianized (LA) virus had no clinical signs of infection. However, lymph node and spleen were virulent 5 days after inoculation and the serum

became positive in the test of c.f. antibody at 10 days.

Pigs showed no clinical reaction to inoculation with lapinized, avianized or LA viruses. However they responded to all the viruses by changes in the blood picture, by the appearance of virus in the blood and by the development of both c.f. and neutralizing antibodies in the serum. The duration of viraemia and degree of the blood changes were more prominent after inoculation with lapinized and avianized viruses than after inoculation with the LA virus.

Hamsters inoculated with the LA virus had no clinical sign of infection, but the virus was demonstrated in lymph nodes from 1 to 6 days, in the spleen from 3 to 5 days and in the liver at 4 to 5 days after inoculation. Serum collected at 16 days contained c.f. antibody. The possibility was discussed of the occurrence of infection without clinical signs in the three animals.

VRTIAK, J., KOPPEL, Z. & BOGDAN, J. (1958). Slizničná choroba hoväd zŕieho dobytku. II. Hromadné ochorenie na východnom Slovensku. [Mucosal disease of cattle. II. Outbreak in Slovakia.]—*Vet. Čas.* 7, 553-568. [In Slovak. Summaries in English, French, German and Russian.] 2099

The authors described in detail the clinical picture and pathology of mucosal disease in seven young cattle of a herd of 60. The disease was experimentally transmitted to 12 cattle by either intraperitoneal, intranasal or swab infection, with faeces, peritoneal fluid, nasal secretion, blood or spleen material. The course of experimental infection was, as a rule, milder than that of the spontaneous disease. Details were also given of results of electrophoretic analysis of serum protein fractions and haematological examination. There are illustrations of lesions in the interdigital epidermis, the tongue, and the pharyngeal, intestinal and nasal mucous membranes.—E.G.

HYLDGAARD-JENSEN, C. & SIMSEN, M. G. (1959). Omgangssyge—Virusdiarrhoe? [Epidemic disease of cattle—virus diarrhoea?].—*Medlemsbl. danske Dyrlægeforen.* 42, 12-14. [In Danish.] 2100

An account of a highly infectious disease of cattle which, although it has occurred repeatedly in Denmark does not appear to have been previously recorded. The Danish name ("Omgangssyge") merely means epidemic. Morbidity in all outbreaks has been very high, and mortality low, yet it causes loss of milk production, it is estimated, amounting on average to 2.65 kg. per cow per day. The clinical symptoms (described

in detail), the incubation time (4-8 days), morbidity and mortality correspond to those reported for virus diarrhoea in the U.S.A. [*V.B.* 17, 792; 18, 313; 26, 1964 & 3477; 28, 1427], though abortion does not appear to result from the disease in Denmark. A similar disease has been described in Sweden [*V.B.* 22, 729.]

—F.E.W.

OTTOSEN, H. E. (1958). La pneumonie à virus des bovins. [Virus pneumonia in cattle.]—*Bull. Off. int. Epiz.* 50, May, pp. 422-430. [Summary in English.] 2101

Over a period of 18 months the disease was diagnosed in 92 cattle (mostly calves aged 1-6 months) from 85 farms in Denmark. Pneumonitis lesions were also observed histologically in all except 5 of 204 slaughter cattle (150 calves and 54 cows). The clinical aspects, macroscopic and microscopic lesions are described. Results of transmission experiments are considered of little value in view of the widespread incidence of the disease. It was observed that the infection was mild in animals kept under favourable conditions of nutrition and environment.

—T.E.G.R.

STEELE-BODGER, A. & WRIGHT, D. (1959). Tissue vaccines in the treatment of bovine papillomas.—*Vet. Rec.* 71, 59-60. 2102

In addition to the true benign epithelial papilloma, two varieties of warty growth, probably of viral origin, are encountered in cattle, the simple small finger-like outgrowths on the teats and udder of heifers and the larger more complex verrucose "angleberries" usually on the neck and abdomen of bullocks. Treatment of these by two s/c injections, at an interval of 2-3 weeks, of 1-3 ml. of an autogenous vaccine prepared from all types of wart and from different sites of as many affected members as possible has been used with good results for the past 10 years. Vaccination initially causes stimulation of the warts to a mushroom-like rate of growth.—A. ACKROYD.

SHOPE, R. E., MANGOLD, R., MACNAMARA, L. G. & DUMBELL, K. R. (1958). An infectious cutaneous fibroma of the Virginia white-tailed deer (*Odocoileus virginianus*).—*J. exp. Med.* 108, 797-802. 2103

The authors describe a fibroma which affects deer in New Jersey. This may be identical with that reported from Wisconsin, Virginia, California and Vermont and variously identified as "papillomas", "fibromas", "wart-like structures", and "fibrosarcomas". In the majority of deer experimental infection by scarification of the skin proved to be regressive and probably

in nature serious disease eventuates only in a minority. There is no metastasis or infection of the regional lymph nodes, but tumours on the face, nostrils and around the eyes can lead to serious results. The tumours may also occur on flanks, legs and other parts of the body, indeed, affecting a very large proportion of the skin area. Tumour material in saline/glycerol proved to be infective and could be stored at -20°C . up to two years. The virus responsible passed through Berkefeld N candles but was partially retained by Seitz filter pads. The virus failed to infect rabbits, sheep and cattle. Conversely "bovine papilloma" virus failed to infect deer. The fibroma-producing virus is thought to be a specific virus of wild deer.—R. N. FIENNES.

CAMPANO LOPEZ, A. & SANCHEZ BOTIJA, C. (1958). L'épizootie de fièvre catarrhale ovine en Espagne. (Blue tongue.) [*Bluetongue in Spain.*]—*Bull. Off. int. Epiz.* 50, May. pp. 67-93. [Summary in English.] 2104

Bluetongue spread into Spain from Portugal in August 1956, and by the end of the year 132,759 of 176,300 affected animals died. Four outbreaks far from the focus of infection were brought under control by slaughter of infected animals and vaccination of in-contacts. In 1957, after mass vaccination, the incidence was 783 with 168 deaths. The epidemiology of the disease is discussed. Mortality varied in different areas from 4.7 to 0.05% of total sheep population, according to ecological factors, and rapidity of application and effectiveness of sanitary control measures and vaccination. The clinical and pathological manifestations were similar to those observed in South Africa. The epizootic was controlled by mass vaccination. Immunity was established in 10-20 days, after which no fresh cases occurred. Vaccination was effective in animals over 3 months of age and it had no adverse effects when applied to healthy sheep in infected flocks. Some breakdowns of immunity occurred, mostly in debilitated animals. All virus strains isolated were immunologically identical. It was decided to re-vaccinate the entire sheep population in 1958.—T.E.G.R.

CHANDLER, R. L. (1959). Attempts to demonstrate antibodies in scrapie disease.—*Vet. Rec.* 71, 58-59. 2105

No antibodies could be detected in the sera of sheep and goats artificially or naturally infected with scrapie, when examined by 10 different types of serological test in general laboratory

use. Antigens used were cerebrospinal fluid and saline extracts of brain from advanced cases.

—A. ACKROYD.

ROGER, F., FAURE, M. & ROGER, A. (1958). Le virus de l'avortement des ovins. Un nouveau mode de purification et de concentration des corps élémentaires basé sur les variations de leur comportement en fonction du pH par rapport à l'interface eau-éther. [The virus of ovine abortion. A new method of purification and concentration of elementary bodies.]—*C. R. Soc. Biol., Paris* 152, 963-965. 2106

Elementary bodies were purified by differential centrifuging and the resulting suspension was mixed with an equal vol. of ether. The behaviour of the elementary bodies in relation to the surface of contact of the liquids varied considerably according to the pH of the water; at pH 3 they occupied the inter-surface while at pH 7-10 they were concentrated in the water. This phenomenon provides a simple process for the separation and concentration of the elementary bodies.—T.E.G.R.

MASU, S., KAWAMURA, Y., YOSHIMURA, M. & NAKAJIMA, T. (1958). [Cultivation of goat pneumonia virus by tissue culture methods.]—*Bull. Azabu vet. Coll., Japan* No. 5. pp. 59-67. [In Japanese. Abst. from English summary.] 2107

Growth of mouse-adapted goat pneumonia virus in mouse lung tissue culture was studied. Multiplication started 12 hours after inoculation and continued for 11 days. Characteristic lung lesions were reproduced in mice by intranasal instillation of culture suspensions. The virus was passaged in mouse lung tissue cultures in which cytopathogenic effects were observed

—T.E.G.R.

FORŠEK, M. Z. (1958). Primjena gel-difuzionog precipitin-testa u dokazivanju virusa svinjske kuge. [Demonstration of swine fever virus by the gel-diffusion precipitation test.]—*Vet. Glasn.* 12, 867-871. [In Croat. Summary in English.] 2108

Using the modification of the plate gel-diffusion precipitation test described by Mansi [*V.B.* 28, 445], F. examined pancreatic tissue from 173 pigs experimentally infected with swine fever, from 14 pigs with spontaneous swine fever, and from 7 pigs and 45 rabbits experimentally infected with attenuated virus. It was impossible to distinguish between attenuated and pathogenic strains of virus. A good precipitation zone was obtained by putting the

hyperimmune serum in the centre hole 2-4 hours after placing the pancreatic tissue in the peripheral holes. The test was specific and considered useful for routine examinations in the field and also for the demonstration of immunity in vaccinated pigs.—E.G.

SÁNCHEZ FRANCO, A. (1957). Sobre algunos aspectos hematológicos y anatomopatológicos de la peste porcina. [Blood picture and lesions in swine fever.]—*An. Fac. Vet. Leon* 3, No. 3. pp. 59-73. 2109

The author studied the blood picture and lesions of 320 experimentally infected pigs aged 1-2 years with a view to establishing diagnostic criteria. The pigs were killed 6 days after infection. In general, the distribution of lesions and the occurrence of leucopenia, lymphopenia and increased sedimentation rate of blood, corresponded with the findings of other authors.

—R.M.

BOGDAN, J. (1957/58). Príspevok k problému inklúzií pri more ošipných. [Inclusion bodies in swine fever.]—*Folia vet., Košice* 2, 51-58. [In Slovak. Summaries in English, German and Russian.] 2110

B. failed to demonstrate inclusion bodies of the type described by Uhlenhuth & Haendel in 1910, in conjunctival smears from 50 pigs with natural and 200 with experimental swine fever, although certain nuclear changes, including pyknosis, were present. In 80% of stained smears from the gall bladder, dark formations resembling inclusion bodies, as described by Boynton *et al.* [*V.B.* 13, 111 & 584] were present in nuclei of epithelial and glandular cells. Smears were compared with those obtained from 100 normal slaughter pigs and from 50 with Teschen disease, swine erysipelas or salmonellosis.

—E.G.

PEHL, K.-H. (1958). Der Einfluss von Coli-Vakzine auf die Leukozytenregulation bei gesunden und schweinepestkranken Schweinen. [Influence of *E. coli* vaccine on leucocyte regulation in healthy pigs and pigs with swine fever.]—*Arch. exp. VetMed.* 12, 444-450. 2111

Although pigs with swine fever developed leucopenia, it was not possible to use leucocyte counts for diagnostic purposes. When normal pigs and pigs with diseases other than swine fever were inoculated i/v with coli vaccine, there was slight and transient leucopenia followed by considerable leucocytosis. Pigs with swine fever showed more severe leucopenia after inj. of the

vaccine, and the differential white cell count increased in its shift to the left. The diagnostic value of this reaction was discussed.—R.M.

HOFFMANN, G. (1958). Beiträge zur Histopathologie des vegetativen Nervensystems bei Viruskrankheiten der Haustiere. I. Mitteilung: Das Verhalten peripherer vegetativer Ganglien bei Schweinepest. [Histopathology of the sympathetic nervous system in virus diseases of domestic animals. I. Behaviour of peripheral sympathetic ganglia in swine fever.]—*Arch. exp. VetMed.* 12, 451-501. 2112

The author studied the morphology and cytology of the coeliac ganglion and the ganglion nodosum of the vagus nerve in 202 pigs with various diseases, including 124 with swine fever, and in 23 healthy pigs. The results are presented in detail and will be discussed by the author in a subsequent publication. In general, the changes found in swine fever were regarded as non-specific defensive processes.—R.M.

HECKE, F. (1958). Untersuchungen über den Infektionsweg des Virus der ansteckenden Schweinelähmung (Teschener Krankheit) nach oraler Aufnahme. [Route of infection with Teschen disease virus after ingestion.]—*Mh. Tierheilk.* 10, 197-217. 2113

H. studied the virus content of tissues and body fluids of young pigs, slaughtered 1-58 days after ingestion of tissue culture porcine encephalomyelitis virus. The virus was demonstrable in rectal contents from the first to the eighth day after infection, one day after infection in the tonsils, and from the second day in the mesenteric lymph nodes, where it remained for several days. In some animals it appeared on the 4th to 5th day in the hepatic lymph nodes and in liver, spleen, kidney and diaphragm, probably via the blood stream. The olfactory lobe was free from virus, except in two animals. The virus is thought to reach the c.n.s. via mouth, pharynx and the cranial nerves. Clinical signs were said to occur only when the c.n.s. itself becomes involved and not during viraemia, 4-6 days after infection. In the subclinical form the infectious process appears to come to a halt after the virus has reached the lymphatic system. Although there is no viraemia in subclinical infection, specific neutralizing antibodies, probably produced in the lympho-reticular tissue, are present in the serum. Epidemiological problems arising from the presence of considerable amounts of virus in faeces, tonsils and regional lymph nodes during the early, symptomless phase of Teschen disease were discussed.—E.G.

BREZA, M. & BELOBRAD, G. (1959). K otázke vzťahu infekčnej obrny a pl'účnej červivosti (metastrongylózy) ošípaných. [**Relationship between Teschen disease and lungworm infestation in pigs.**] — *Sborn. čes. Akad. zemědělsk. Věd, vet. Med.* 4 (32), 27-44. [In Slovak. Summaries in German and Russian.] 2114

Based on Shope's work on the role of helminths in swine influenza, and swine fever [*V.B.* 26, 1262; 23, 1781 and 2484] the authors investigated the possible association between lungworms and Teschen disease. Of 133 of 267 pigs slaughtered because of clinical symptoms of Teschen disease, nearly half were infested with lungworms. Peaks of both Teschen disease and lungworm infestation coincide during the cooler period of the year. In lungworm infestation there is an additional, minor peak at the beginning of summer. These peaks reflect the seasonal incidence of earthworms which were present in large numbers in pig runs and under floor boards in some sites. If lungworm larvae can act as reservoirs of Teschen disease virus it would explain the repeated recurrence of Teschen disease in some piggeries, despite thorough disinfection.—E.G.

MAYR, A. (1958). Ein Gewebekulturimpfstoff gegen die ansteckende Schweinelähmung (Chloroform-Formalin-Adsorbatvaccine). 2. Teil. Prüfung der Wirksamkeit und Unschädlichkeit des Impfstoffes. [**Tissue culture vaccine against Teschen disease. II. Tests of activity and harmlessness.**] — *Zbl. Bakt. I. (Orig.)* 173, 524-538. [Summaries in English, French, Spanish and Russian. English summary modified.] 2115

A chloroform-formalin-adsorbate vaccine from tissue culture of pig-kidney was examined.

After a single inoculation the serum of pigs regularly contained virus-neutralizing antibodies. The antibodies appeared in the blood on the 5th day after vaccination, increased very quickly and reached their maximum during the 4th and the 6th week, with average values between 1:32 and 1:128. A booster vaccination 48 days after the initial vaccination caused an eight to tenfold increase of neutralizing antibodies.

About 75% of the vaccinated animals resisted intracerebral challenge.

After storage for 3 months at 4°C. the potency of the vaccine was not impaired.

MANNINGER, R., MÉSZÁROS, J. & SZENT IVÁNYI, T. (1958). Újabb vizsgálatok a sertések fertőző gyomorbél-gyulladásának oktanáról.

[**Aetiology of porcine infectious gastro-enteritis.**]—*Mag. állator. Lapja* 13, 309-314. [In Hungarian. Summaries in English and Russian.] 2116

Faecal suspension containing *Vibrio suis* and the virus of infectious gastroenteritis was administered *per os* to 28 pigs, 3-4 months old and weighing 15-35 kg. A mild rise of temperature lasting for 3-15 days was observed in all the pigs, diarrhoea lasting for 1-7 days in 11, but all recovered except 6 which were killed for P.M. examination; these 6 all revealed a picture of typical gastroenteritis. Repeated bacterial examinations did not indicate the increase, nor in some of the cases even the presence, of *V. suis* in the faeces of the infected animals. In 2 further pigs of similar age infection with pure cultures of *V. suis* did not result in any clinical or bacteriological changes in the intestines. Similar results with more severe symptoms were obtained in 20 unweaned piglets, less than 3 weeks old. 5 of these were infected with filtered vibrio-free material, but their history did not differ from that of the other 15.

The experiment suggests that *V. suis* plays no significant role in the aetiology of infectious gastroenteritis of piglets which is caused solely by a virus.—A. SEBESTENY.

FONTAINE, M., FONTAINE, M. (MME.), GORET, P., BRION, A. & PILET, C. (1958). Une enzootie de pneumonie à virus du porc dans la région parisienne. Isolement et essai d'identification du virus en cause. [**An outbreak of porcine virus pneumonia in the Paris region. Isolation and attempted identification of the virus.**]—*Bull. Acad. vét. Fr.* 31, 451-471. 2117

An account of virus pneumonia in a herd of pigs, giving the symptoms, gross and microscopic lesions, results of transmission experiments, characteristics of the virus and serological tests. In discussion on the paper the question was asked whether there was any relationship between this disease in pigs and virus pneumonia in other animals, particularly dogs.

—T.E.G.R.

HANCOCK, B. B., BOHL, E. H. & BIRKELAND, J. M. (1959). Swine kidney cell cultures—susceptibility to viruses and use in isolation of enteric viruses of swine.—*Amer. J. vet. Res.* 20, 127-132. [Authors' summary modified.] 2118

A simple technique was used to culture epithelial-type cells from pig kidneys. The following viruses were cytopathogenic for these cells: herpes simplex, Aujeszky's disease,

canine virus hepatitis, Newcastle disease, and enteric cytopathogenic human orphan (strain 10). Viruses were isolated readily from the intestinal tracts of pigs, using this tissue culture system. So far, 30 unidentified viruses have been isolated from 8 pig herds. Attempts are being made to determine their antigenic relationships and their possible role in disease. Characteristics of 4 of these agents are described.

HOPPER, P. K. (1959). **The propagation of canine distemper virus in tissue culture.**—*J. comp. Path.* **69**, 78-86. [Author's conclusions modified.] **2119**

Kidney cells from unweaned ferrets were suitable for serial growth of egg-adapted distemper virus. Unadapted virus will grow only for a limited time in these cultures, and not in dog, rabbit or human kidney cells. Spleen cultures will not support continuous virus multiplication, but respiratory tissues of the ferret and dog may do so.

HARA, T. (1957). **Studies on canine distemper. I. Sensibility of adult hamsters.**—*N.I.B.S. Bull. biol. Res., Tokyo* **2**, 58-66. [In English. Author's summary modified.] **2120**

No symptoms were shown by adult hamsters when inoculated subcutaneously, intraperitoneally or intranasally with avianized distemper virus, but strong neutralizing antibody was produced after intraperitoneal inoculation. Immune response was manifested by hamsters inoculated intraperitoneally with some virus dilutions close to the highest which produced lesions on the chorioallantoic membrane of embryonated eggs.

Hamsters showed no immune response to virus inactivated by ultraviolet-ray irradiation.

The virus inoculated intraperitoneally into hamsters showed a tendency to multiply, though slightly, in the spleen and anterior mesenteric lymph nodes within 3 and 4 days after inoculation, but it was not demonstrated in any organ at 6 days when neutralizing antibody was produced.

CROOK, E., GORHAM, J. R. & McNUTT, S. H. (1958). **Experimental distemper in mink and ferrets. I. Pathogenesis.**—*Amer. J. vet. Res.* **19**, 955-957. **2121**

Distemper virus was detectable by ferret assay in the blood of ferrets 2 days and of mink 3 days after experimental exposure. Viraemia persisted throughout the disease. The respiratory system in both species was the earliest and most favourable site for virus multiplication but high virus titres were attained in nasal tissue, liver and brain, and low titres in most other tissues and organs.—A. ACKROYD.

OLÁH, P. (1958). **Experiments for the production of immune serum and vaccine against infectious hepatitis of the dog (Rubarth's disease).**—*Acta vet. Acad. Sci. hung.* **8**, 409-423. [In English.] **2122**

Only dogs which had naturally high levels of complement-fixing antibodies against canine virus hepatitis (CVH) were used as serum producers. Intravenous injection of a 20% suspension of liver of young experimentally infected dogs was effective in producing an immune serum if the livers gave a positive c.f. reaction of at least 1:8 or 1:16. In doses of 0.5 ml./kg. body wt. the immune serum afforded complete protection to dogs aged 7-10 weeks against 10⁵ M.I.D. of virulent CVH virus injected at the same time. Bivalent immune serum against CVH and distemper required a dosage of 1.5 ml./kg. to give complete protection. Against distemper, bivalent antiserum was less potent than monovalent distemper antiserum. Prevention of CVH was possible if the immune serum was given not later than 48 hours after infection. A linear correlation was observed between the c.f. titre and the protective value of the immune serum. Active immunization against CVH was achieved with a vaccine containing inactivated virus. Only 20% homogenized liver suspensions with a virus titre of 1:64 as determined by the c.f. test were suitable for vaccine production. The most potent vaccine was attained by freezing and thawing the liver suspension 5 times, adsorbing the virus with 10 mg./ml. Al (OH)₃ and inactivating it with 0.05% formaldehyde at pH 6.2. Two millilitres of vaccine have given immunity for at least 5 months.—A. ACKROYD.

ZOLETTO, R. (1958). **Un caso di pseudopeste naturale nel piccione.** [**Natural Newcastle disease in a pigeon.**]—*Vet. ital.* **9**, 536-540. [Summaries in English, French and German.] **2123**

Spontaneous Newcastle disease in a pigeon is described. Diagnosis was based on clinical symptoms, P.M. findings, haemagglutination and haemagglutination-inhibition tests, and results of transmission experiments.—T.E.G.R.

DURAND, D. & EISENSTARK, A. (1959). **Titration of Newcastle disease virus in tissue culture.**—*Amer. J. vet. Res.* **20**, 116-118. [Authors' summary modified.] **2124**

A replicate tissue culture system for the titration of Newcastle disease virus was developed. This titration method depends on the change in colour of pH indicators, due to the different metabolism of infected and healthy tis-

sue cells. Using this method, it was possible to titrate the virus and immune sera against it with reproducible results.

CHANDRASEKHARAN, K. P. & KRISHNAN, R. (1958). **Haematology in Ranikhet disease.**—*Indian vet. J.* **35**, 616-619. [Authors' summary modified.] **2125**

Using standard methods the blood picture in 10 spontaneous cases of Newcastle disease in chicks was studied.

During the course of the disease, there was a slight rise in total r.b.c. count, haemoglobin value and packed cell volume and reduction in total w.b.c. count and sedimentation rate.

Differential count of leucocytes showed marked reduction in lymphocytes and a significant increase in heterophiles. But the basophiles, monocytes and eosinophiles remained almost unchanged.

CARNAGHAN, R. B. A. (1959). **An outbreak of infectious synovitis in chickens.**—*Vet. Rec.* **71**, 81-85. [Author's summary.] **2126**

An outbreak of disease in broiler chickens characterized by joint enlargement is described and a description is given of the experimental reproduction and treatment of the condition. The similarity of the disease to infectious synovitis as described by American workers is discussed.

SHEHATA, H. (1958). Weitere Untersuchungen über die Virushepatitis der Enten in Deutschland. I. & II. Mitteilung. [**Further studies on virus hepatitis of ducks in Germany.**]—*Dtsch. tierärztl. Wschr.* **65**, 320-323 & 346-352. [Summaries in English.] **2127**

This paper gives further details of the virus hepatitis reported in 1957 [*V.B.* **27**, 1781]. Differential diagnosis was discussed and the disease appeared to differ from the duck plague described by Baudet (1923). Petechial haemorrhages occurred in the liver in 70% of cases. Incubation period was 2-5 days, being briefest after oral or intranasal infection. Mortality among ducklings aged 2-10 days was 58%. A histopathological study revealed liver lesions similar to those described by other authors. Other findings were granulomas in the liver of ducklings which survived infection; non-purulent leptomeningitis and serous encephalitis; inclusion bodies in liver cells.—R.M.

DONALDSON, P., DAVIS, D. E., WATKINS, J. R. & SULKIN, S. E. (1958). **The isolation and identification of ornithosis infection in turkeys by tissue culture and immunocytochemical**

staining.—*Amer. J. vet. Res.* **19**, 950-954. **2128**

Yolk sac explants, inoculated with cloacal and tracheal swabs from turkeys experimentally infected with psittacosis virus and fixed in acetone after 48 hours' culture, were flooded with a fluorescein conjugated antiserum. Seven of the 10 cloacal specimens collected on the 3rd post-inoculation day were positive by this fluorescein antibody technique and 9 of 10 tracheal specimens were positive by the 7th day although none of the four taken on the 3rd day yielded infected explants. Only 2 of the 10 turkeys had indirect complement-fixation titres of 1:16 seven days after inoculation of virus; all except one had high titres by the 14th day. This fluorescein antibody technique proved unsatisfactory when direct tracheal smears were examined.

—A. ACKROYD.

I. SOMMERVILLE, R. G. (1959). **Type-I poliovirus isolated from a budgerigar. Further studies.**—*Lancet* March 7th, 495-496. [Author's summary modified.] **2129**

II. DANE, D. S., DICK, G. W. A. & DONALDSON, S. N. (1959). **Budgerigars and poliomyelitis.**—*Ibid.* 497-498. [Authors' summary modified.] **2130**

I. The characters of a poliovirus type I isolated from a budgerigar recovering from paralysis have been examined. Attempts to infect further budgerigars with it were unsuccessful, although all the birds became unwell between the 15th and 21st days after inoculation. No effect was observed in chickens after inoculation of the virus with or without the simultaneous administration of hydrocortisone.

A survey of 224 families in which there had been poliomyelitis revealed that 56 had budgerigars and that in 17 instances the birds died at about the same time as a child in the house contracted poliomyelitis. Illness in the budgerigar could not be correlated with the demonstration of poliovirus in the child's stool.

II. Budgerigars proved resistant to infection with 11 strains of poliovirus given by the oral and intracerebral routes.

No evidence could be found that budgerigars are at all commonly infected with polioviruses in Northern Ireland.

Thirty of 99 poliomyelitis patients questioned kept pet budgerigars. Three of the 30 reported the death of one or two birds about the time of their illness.

SERBĂNESCU, C., DRĂGHICI, D. & SOLNITZKY, A. (1958). **Studiul modificărilor histologice ale miocardului în evoluția unor boli infec-**

țioase (Pestă porcină, boala lui Aujeszky, boala de Teschen și turbarea). [Myocardial histology in swine fever, Aujeszky's disease, Teschen disease and rabies.]—*Anu. Inst. Pat. Igien. anim. București* (1957) 8, 249-259. [In Roumanian. Summaries in French and Russian.] 2131

The authors studied histological myocardial lesions in 13 pigs with swine fever, in 10 with Teschen disease, in 10 pigs and sheep with Aujeszky's disease and in 6 dogs, 2 cats, 2 sheep and a cow with rabies. The lesions were mainly confined to the cardiac fibres and the interstitial tissue, particularly in the right auricle. In swine fever, lesions were more pronounced than in other diseases, consisting of granular and hyaline degeneration, fatty infiltration, fragmentation of muscle fibres and polynucleation. The Purkinje cells were vacuolated and swollen. In other diseases lesions were generally of the congestive-haemorrhagic type, rarely degenerative.—E.G.

GROSSKOPF, J. F. W. (1958). Hartwater-immunisatie van elande (*Taurotrachus oryx oryx*, Pallas). [Immunization of eland (*Taurotrachus oryx oryx*) against heartwater.]—*J. S. Afr. vet. med. Ass.* 29, 329-330. [In Afrikaans. English summary modified.] 2132

Eight young eland, from a heartwater-free area, were each injected with 10 ml. of heartwater-infected sheep blood. Slight temperature rises occurred between the 12th and 17th day after infection but no other symptoms were noticed. These antelopes have since grazed on infected veld without contracting the disease. It is, therefore, thought to be quite safe to transfer these antelopes from heartwater-infected areas.

FINELLE, P. (1958). Rickettsiose à *Rickettsia bovis* en Oubangui-Chari. [*Rickettsia bovis* infection: clinical aspects.]—*Rev. Elev.* 11, 291-292. [Summaries in English and Spanish.] 2133

See also absts. 2028 (leptospirosis antibodies in horses in an infectious anaemia region); 2073 (effect of toxoplasmosis in a squirrel on lab. diagnosis of rabies); 2305 (report, Canada); 2308 (report, Denmark).

The disease occurs at the beginning of the rainy season in French Equatorial Africa where it is known by the name of "Nopi". It is characterized by intense pruritus of the ears and may be acute, subacute or chronic. The acute form was observed in a 2-year-old bullock with pruritus and swelling of the ears, congestion of the eyes and nostrils (with lachrymation and discharge), enlarged superficial lymph nodes, emaciation, inappetence, constipation and fever. Treatment with chlortetracycline caused a temporary improvement but after 8 days the animal died. The subacute form was observed in 5 cows and a yearling, all in poor condition and with cutaneous mycosis; symptoms (anorexia and slight enlargement of the superficial lymph nodes) disappeared spontaneously within a week. The chronic form has no clear symptoms and is diagnosed by microscopic examination of the blood. All the affected animals carried *Amblyomma variegatum* and *Boophilus decoloratus*. It is considered that the rickettsia is only slightly pathogenic and the disease is precipitated by climatic and other factors.—T.E.G.R.

GMITTER, J. (1959). Q-horúčka, veterinární a zdravotnický problém v ČSR. [The Q-fever problem in Czechoslovakia.]—*Sborn. Čes. Akad. zemědělsk. Věd. Vet. Med.* 4 (32), 55-70. [In Slovak. Summaries in English, German and Russian.] 2134

Q fever antibodies were present in 1,512 of 18,109 serum samples from sheep, 570 of 2,494 from cattle, 72 of 329 from goats and 6 of 31 from man, in Slovakia. Samples from 83 pigs were negative. During an outbreak in southern Slovakia, over 50 human beings became infected, mainly from cattle, either by air-borne or milk-borne infection, or by contact. Four strains of *Rickettsia burneti* were isolated from a number of people among whom were three veterinary surgeons, three from cows, calves and aborted fetuses and four from ewes and aborted fetuses.—E.G.

IMMUNITY

TURK, J. L. (1958). Immune adherence with soluble antigens.—*Immunology* 1, 305-314. [Author's summary.] 2135

Immune-adherence has been demonstrated by haemagglutination with four soluble antigens, two polysaccharide and two protein.

A zone phenomenon occurs with the

immune-adherence of soluble antigens similar to that found with other antigen-antibody reactions.

It is suggested that the failure of immune-adherence with two soluble antigens, despite marked fixation of complement, is due to the failure of the antigen-antibody complexes to fix all four components of complement.

HALLIDAY, R. (1959). The effect of steroid hormones on the absorption of antibody by the young rat. — *J. Endocrin.* **18**, 56-66. [Author's summary modified.] **2136**

Evidence is presented of a relationship, in mice and rats, between adrenocortical steroids, the alkaline phosphatase activity of the duodenum and the ability of the young animal to absorb antibody from the gut. The normal decline in absorptive ability coincides in time with an increase in the duodenal alkaline phosphatase. Both these processes could be induced prematurely by large doses of deoxycorticosterone acetate (DCA) or cortisone acetate. The initial effect of cortisone was an increase in antibody absorption; the reduction in absorption which followed was complete after 2 days. Aldosterone, progesterone, testosterone and stilboestrol had no effect on antibody absorption comparable with that of cortisone or DCA. Maintenance of the young animal away from its mother resulted in a reduction of absorption similar to that resulting from cortisone or DCA administration.

SOKOL, A. (1957/58). Vyprovokovanie predčasnej produkcie gamaglobulínu u prasiat nadmerným antigénnym zaťažením. [Induction of precocious gamma-globulin production in piglets burdened by excessive antigen.] — *Folia vet., Košice* **2**, 95-106. [In Slovak. Summaries in English, German and Russian.] **2137**

Serum protein fractions were studied electrophoretically in seven piglets, one week old, on a colostrum-free diet, following oral infection with 1 ml. of a 24-hour culture of *Salmonella cholerae-suis*. Clin. symptoms were suppressed by chloramphenicol and sulphathiazole. The serum protein response consisted of a defence phase and an adaptation phase. Gamma globulin production at such an early age was considered detrimental to health and further development. —E.G.

LINDAHL, P. E. (1959). On the antigenic properties of sperm antagglutins.—*Exp. Cell Res.* **16**, 394-402. [Author's summary modified.] **2138**

A procedure was developed for the detection of antibodies reacting with spermatozoal antagglutins, using the ratio of agglutinated spermatozoa as an indicator. It is based upon the fact that only reduced antagglutins react simultaneously with the spermatozoal cell surface and the antibodies, thereby causing agglutination of the spermatozoa. Spermatozoal

antagglutins from both the bull and the cow induce the formation of antibodies in the rabbit. These react with both antagglutins irrespective of which of them has been used for immunization, and also with male rabbit antagglutin. This suggests that the male and female cattle antagglutin and male rabbit antagglutin have certain related structures in common. The ability of the surface of the spermatozoon to bind antagglutins is limited to the head and the middle-piece.

CHADWICK, C. S., McENTEGART, M. G. & NAIRN, R. C. (1958). Fluorescent protein tracers. A trial of new fluorochromes and the development of an alternative to fluorescein. — *Immunology* **1**, 315-327. [Authors' summary modified.] **2139**

RB 200 (lissamine rhodamine B 200) has proved a successful alternative to fluorescein. The conjugation of dye to protein by a sulphonamido linkage is quick and simple and does not materially affect the physico-chemical or biological properties of the protein. The resulting conjugates are stable, have a brilliant orange fluorescence in ultra-violet light and good contrast with tissue autofluorescence. The contrast is sufficient to permit the use in microscopy of ultra-violet plus blue light with a yellow filter above the object to ensure a black background; fluorescence is greatly enhanced in this way.

When injected i/v into rats or rabbits, conjugates are distributed in the tissues and eliminated from the plasma in much the same way as proteins labelled with fluorescein or radioactive isotopes. Serum antibody conjugated with RB 200 retains immunological specificity as demonstrated by the staining of the corresponding antigen. Practical use has been made of RB 200 conjugates as plasma tracers and as specific immunological stains: they have been applied alone and in combination with fluorescein conjugates in double tracing experiments.

NEIMANN-SØRENSEN, A. (1958). Blood groups of cattle. Immunogenetic studies on Danish cattle breeds.—*Thesis, Copenhagen* pp. 177. [In English. Summary in Danish.] **2140**

After a discussion of the literature the author described studies on the blood groups of 4 breeds of cattle: Jersey, Red Danish, Black and White Danish and Shorthorn. The nomenclature of Stormont was used. Inheritance of single blood group factors was investigated in 709 matings. Family studies on blood group systems and gene frequencies, genetic studies on the blood types of a cattle population, breed

differences in blood groups, the degree of homozygosity and parentage determination are described in detail and it is not possible to

summarize the author's findings concisely: the original should be consulted by those interested.

—R.M.

See also absts. 1988-1990 (tuberculin); 1991 (c.f. capacity of aqueous extracts of mycobacteria); 1992 (sensitivity to tuberculin in cattle, vaccinated against Johne's disease); 1996 (allergic diseases in swine erysipelas serum horses); 1997-1998 (swine erysipelas); 2006 (pasteurellosis); 2010-2021 (brucellosis); 2028 (leptospirosis); 2029 (leptospirosis in horses in an infectious anaemia region); 2030 (leptospirosis); 2037 (Cl. welchii infection); 2042-2044 (vibriosis); 2057 (fungus skin infections); 2060-2061 (caprine pleuropneumonia); 2064 (differentiation between T. rhodesiensis and T. brucei); 2077-2082 (F. & M. disease); 2085-2087 (rabies); 2090-2093 (tick-borne encephalitis); 2095-2096 (equine influenza); 2097-2098 (rinderpest); 2102 (bovine papillomatosis); 2105 (demonstration of scrapie antibodies); 2108 (demonstration of swine fever virus by gel diffusion); 2115 (Teschen disease); 2122 (Rubarth's disease); 2128 (ornithosis);

PARASITES IN RELATION TO DISEASE [GENERAL]

MYKYTOWYCZ, R. & HESTERMAN, E. R. (1958).

On the occurrence of coccidial oocysts and nematode ova in soft and hard faeces of the wild rabbit, *Oryctolagus cuniculus* (L.). — C.S.I.R.O. Wildlife Res. 3, 142-143. 2141

Counts of nematode ova and coccidial oocysts were made from both hard and soft rabbit faeces, and statistical analysis indicated that there was no significant difference between counts from the two types of faeces.

—R. I. SOMMERVILLE.

ROTHSTEIN, N. (1959). **Vital staining of blood parasites with acridine orange. — J. Parasit. 44, 588-595. [Author's summary modified.] 2142**

Vital staining of whole blood with the basic fluorochrome acridine orange was a rapid and simple technique for examining, under dark-field illumination, differentiated leucocytes, and erythrocytes containing the malarial organism in the presence of unstained normal erythrocytes. Microfilariae, trypanosomes, and toxoplasmas have also been stained. Auxiliary use of glass filters has shown that the disadvantage of thick blood suspensions may be eliminated, permitting rapid observation of leucocytes and blood parasites. Photochemical inactivation of leptospirae and microfilariae has been demonstrated. Differences in sensitivity or tolerance to acridine orange have been found in *T. cruzi* and *T. equiperdum*.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

ROTH, L. M. & WILLIS, E. R. (1957). **The medical and veterinary importance of cockroaches. pp. 147. Washington: Smithsonian Institution. [Smithson. misc. Coll. 134, No. 10.] 2143**

This monograph deals exhaustively with evidence for the transmission of pathogens by cockroaches. There is no separate section on the veterinary importance of these insects, but the information presented may be summarized as follows. Natural transmission of viruses has not yet been proved, but poliomyelitis virus has been isolated from cockroaches. About 40 species of pathogenic bacteria have been isolated including *Brucella abortus* (which does not remain alive in the intestinal tract of the American cockroach for more than 24 hours), several species of salmonella and the causal agents of fowl cholera, anthrax, blackleg, tetanus and tuberculosis. *Aspergillus fumigatus* and *A. niger* have been found in cockroaches. Cockroaches serve as the intermediate hosts of at least 12 species of helminths, including *Hymenolepis* sp., *Ascaris lumbricoides*, trichostrongyles, *Gongylonema* spp., *Tetrameres americana*. In general, this monograph demonstrates that the capacity

of the cockroach to transmit disease is usually underestimated.—R.M.

BREEV, K. A. & SAVEL'EV, D. V. (1958). **[The warble fly of reindeer and its control.] pp. 102. Moscow: Izd. Akad. Nauk S.S.S.R. [Vsesoyuznoe Entomologicheskoe Obshchestvo, Nauchno-populyaraya seriya No. 6]. 1r. 60k. (1s. 6d.) [In Russian.] 2144**

This booklet describes the life history of *Oedemagena tarandi* and its incidence and control in the U.S.S.R. The parasite is present wherever reindeer are kept, except Novaya Zemlya, the New Siberian islands and a few other arctic islands. Almost all animals in a herd are affected each year, and there may be as many as 1,000 larvae in one animal, although the average is 100-200. The principal method of control is spraying the herds up to 20 times during the summer with an emulsion containing 2% DDT and 2% BHC, with the object of killing the flies and other blood-sucking insects.

—R.M.

DRUMMOND, R. O. (1958). **Laboratory screening tests of animal systemic insecticides.—J.**

econ. Ent. **51**, 425-427. [Author's summary modified.] 2145

G. pigs, infested with nymphal *Amblyomma americanum* and larvae of *Callitroga americana*, were treated orally or subcutaneously with the compounds; after treatment, stable flies, *Stomoxys calcitrans*, were fed on the g.pigs.

Dimethoate (*O,O*-dimethyl *S*-(*N*-methylcarbamoylmethyl) phosphorodithioate), Bayer 23,129 (*S*-2-(ethylthio)ethyl *O,O*-dimethyl ester phosphorodithioic acid), and Bayer 23,453 (*S*-2-(ethylsulphinyl) ethyl *O,O*-dimethyl ester phosphorodithioic acid) were toxic to all three invertebrates. Bayer 21/199 and Dow ET-57 were toxic to screw-worms and stable flies but not the ticks. Hercules AC-528, Tedion, Thiodan, and Trithion were ineffective.

Compounds which showed promise in g.pigs were tested further in sheep and goats, being administered as drenches to sheep infested with screw-worms and to goats infested with screw-worms and *A. americanum* ticks. After treatment, stable flies were fed on the goats.

Dimethoate, Bayer 23,129, and Dow ET-57, used in tests with sheep and goats, were all effective against screw-worms, and dimethoate was also effective against the other arthropods.

BOOCOCK, D. (1959). **Malathion — The safe organo-phosphorus insecticide.** — *Pest Technol.* **1**, 120-127. 2146

Malathion was introduced in 1949 as Experimental Insecticide no. 4049. The British Standards Institute has now adopted for it the name *S*-1: 2-di (ethoxy-carbonyl) ethyl dimethyl phosphorothiolothionate, although it is also known as *O,O*-dimethyl phosphorodithioate of diethyl mercaptosuccinate.

There are notes on the physical properties of the insecticide (it reacts with iron, tin plate, copper and lead), colorimetric estimation, formulation and toxicity. The U.S. Department of Agriculture permits its use in cowsheds, while prohibiting many other insecticides.

Control of agricultural and horticultural pests is reviewed; malathion has a low toxicity to mammals and plants, although it is not a persistent insecticide. Ministry of Agriculture, Fisheries and Food recommendations for the use of malathion against pests in stored products are given. It is stated that malathion will control the itch mite (*Psorergates ovis*), and northern fowl mite (*Liponyssus sylviarum*) as well as fleas, lice, ticks, red mite etc.

—W. N. BEESLEY.

STAMPA, S. & DU TOIT, R. (1958). **Paralysis of stock due to the Karoo paralysis tick (*Ixodes***

rubicundus. *Neu.*).—*S. Afr. J. Sci.* **54**, 241-246. 2147

In South Africa a motor paralysis affecting particularly the limbs and caused by the tick *I. rubicundus* is a serious disease of sheep and cattle. Animals recover within a few hours when all ticks are removed. Not all *I. rubicundus* ticks are able to cause paralysis. It occurs regularly in certain tick-infested paddocks, and never in others. Two types of immunity have been demonstrated, one against the toxic agent and lasting for not more than 5 weeks, and the other against the tick. Paralysis has never been seen in tethered sheep, despite heavy tick infestation. The life cycle of the tick, which is completed in 2 years, is described. Tick populations are determined by dragging across the pasture a light wooden bar, 6 feet long, behind which trail 12 tubes, 2 inches in diameter and 18 inches long, made of flannelette. The disease is controlled by dipping. Burning of pasture is another possible method of control.—M.G.G.

EMMONS, P. & McLENNAN, H. (1959). **Failure of acetylcholine release in tick paralysis.** — *Nature, Lond.* **183**, 474-475. 2148

Of the common laboratory animals, only dogs, g.pigs and hamsters are subject to paralysis by *Dermacentor andersoni*, but the response is variable. Wild caught ground-hogs, *Marmota flaviventris avara*, are always affected by these ticks. The onset of paralysis varies with the number of ticks and the feeding rate. Paralysis appears to be due to a toxin and once it has developed death usually ensues whether or not the tick is removed. Using hind limb perfusion and twitch response records from various muscles, it was concluded that in paralysed animals there is a lack of acetylcholine release into the perfusion fluid as a response to sciatic nerve stimulation. Although a peripheral neuromuscular block is involved, the authors believe that some central nervous system component is also involved.—W. N. BEESLEY.

FLYNN, R. J. (1959). **Follicular acariasis of mice caused by *Psorergates simplex* successfully treated with aramite.** — *Amer. J. vet. Res.* **20**, 198-200. [Author's summary modified.] 2149

Three weekly topical applications of 2% aq. suspension of a wettable powder containing 15% aramite [2-(*p*-tert-butylphenoxy) isopropyl-2-chloroethyl sulphite] combined with a wetting agent were completely effective against follicular acariasis of mice caused by *Ps. simplex*. It is suggested that mice infested with *Ps. simplex* would serve in the screening of compounds for topical and systemic acaricidal activity.

SZWABOWICZ, A., MIĘDZOBRODZKI, K., PANKOWA, J. & HOLNICKA, B. (1958). Toksyczność rozkruszka mącznego *Tyroglyphus farinae* dla zwierząt. IV. Doświadczenia na kurczętach i kaczkach. [Toxicity of the meal mite *Tyroglyphus farinae* for animals. IV. Chicks and ducks.]—*Med. Wet.*, Warszawa 14, 556-558. [In Polish. Summaries in English and Russian.] 2150

See also absts. 2076 (black fly control and incidence of leucocytozoon infection in turkeys); 2090-2093 (tick-borne encephalitis).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

ABDUSSALAM, M. & SARWAR, M. M. (1957). *Schistosoma spindale* in equines.—*Proc. 9th Pakistan Sci. Conf.*, Peshawar 1957. Part III. p. 126. [Abst. from authors' abst.] 2151

The authors found *Schistosoma spindale* to be a common parasite of ponies in Lahore. In fact, it is more frequent than *S. indicum*, but appears to have been overlooked in the past because of its smaller size.

GEMMELL, M. A. (1959). The fox as a definitive host of *Echinococcus* and its role in the spread of hydatid disease.—*Bull. World Hlth Org.* 20, 87-99. [Summary in French. Author's synopsis modified.] 2152

In this discussion of the fox in the epidemiology of hydatid disease in man, G. reviewed the literature. He presented the results of experimental infestation of the European red fox (*Vulpes vulpes*) with the Australian strain of *E. granulosus*. A few tapeworms became established in some of the foxes, but were retarded in growth (as compared with their growth in dogs) and failed to reach sexual maturity even 112 days after infestation. He therefore concluded that the fox plays no role in the spread of hydatid disease caused by *E. granulosus* in Australia.

SCHWABE, C. W., SCHINAZI, L. A. & KILEJIAN, A. (1959). Host-parasite relationships in echinococcosis. II. Age resistance to secondary echinococcosis in the white mouse.—*Amer. J. trop. Med. Hyg.* 8, 29-36. [Authors' summary modified.] 2153

Mice aged 48 days and under were highly susceptible to i/p inoculation of scolices of *E. granulosus*, and mice aged 71 days or more were relatively resistant. The few cysts which developed in older mice were often larger than those which developed in younger mice. The difference in susceptibility to infection appeared to be related to the magnitude of the cellular response of the host.

T. farinae mixed with mash was fed to 80 chicks, 12 weeks old, and 45 ducks. Each chick received daily about 792 mites for 2 weeks and each duck about 1,650 mites for 3 weeks. All birds remained healthy and, taking into consideration their previous experimental work [V.B. 28, 792 & 29, 760], the authors are of the opinion that any suggestions about toxicity of *T. farinae* for animals, are without foundation. —M. GITTER.

NORMAN, L., SADUM, E. H. & ALLAIN, D. S. (1959). A bentonite flocculation test for the diagnosis of hydatid disease in man and animals.—*Amer. J. trop. Med. Hyg.* 8, 46-50. 2154

The bentonite flocculation test developed by Bozicevich *et al.* [V.B. 22, 2546] for diagnosis of trichinosis, was adapted to echinococcus infection by employing antigen prepared from hydatid fluid. Sera from 4,714 human beings, 1,742 wild mammals and 225 lab. animals were tested and the results were compared with complement-fixation tests. Only 35 of the human sera were from proven cases of echinococcosis, but the test appeared to give reliable results. —R.M.

OLSEN, O. W. & ROBINSON, H. A. (1958). Role of rats and mice in transmitting *Trichinella spiralis* through their feces.—*J. Parasit.* 44, No. 4 Sect. 2 p. 35. 2155

The authors studied the presence of trichinella larvae and undigested cysts in, and the infectivity of, faeces from rats and mice fed meat infected with trichinella. The greatest number of cysts and larvae appeared during the first 24 hours after ingestion. Two young pigs were infested by feeding moist faeces collected during the first 24 hours from rats or mice.—R.M.

STOLL, N. R. (1958). The induction of self-cure and protection, with special reference to experimental vaccination against *Haemonchus*.—*Rice Inst. Pamphl.* 45, 184-208. 2156

S. discussed the literature on this subject and reported for the first time details of his experiments on active immunization of sheep and calves against a large, single test infection of *H. contortus*, which were performed just before (and interrupted by) the second world war. Immunization was attempted by i/p or s/c injection of live, exsheathed larvae in single doses of 3,000-4,000 larvae/kg. body wt. Re-

sistance was challenged in sheep by oral injection. 9 of 10 injected sheep and a calf showed evidence of increased resistance.—R.M.

MAYHEW, R. L., TORBERT, B. G. & MILLER, G. C. (1958). The effects of $\frac{1}{2}$ gram of phenothiazine on the development of infective larvae of *Cooperia punctata* in pure infections in cattle.—*J. Parasit.* 44, No. 4 Sect. 2 39-40. 2157

Phenothiazine was administered in the food at a concentration equivalent to 0.5 g. a calf daily. This dosage was effective in reducing the numbers of infective larvae of *C. punctata* in 7 experimentally infected calves aged between 5 and 20 months.—R.M.

GOLDBERG, A. & LUCKER, J. T. (1959). Survival on pasture of larvae of gastrointestinal nematodes of cattle. II. Spring contamination.—*Proc. helm. Soc. Wash.* 26, 37-42. 2158

In the previous experiment pasture plots were contaminated in midsummer with faeces from cattle infected with species of *Cooperia*, *Ostertagia*, *Trichostrongylus*, *Oesophagostomum*, *Haemonchus*, *Nematodirus* and *Trichuris* [V.B. 26, 2640]. In the present experiment the plots were contaminated in spring: the proportion of infective larvae which survived for 2 months was considerably higher, and the proportion which survived for 4 months was slightly higher, than on plots contaminated in midsummer.—R.M.

HERLICH, H. (1958). Experimental infections of sheep with three species of gastro-intestinal nematodes of cattle.—*Trans Amer. micr. Soc.* 77, 373-379. 2159

Small groups of lambs were fed: *Trichostrongylus axei*; *T. axei* and *Ostertagia ostertagi*; *O. ostertagi*. Four weeks later each group was fed *T. colubriformis*. Two were kept as controls. Those fed *T. axei* were most severely affected. Effects were similar in those fed *T. axei* and *O. ostertagi* simultaneously and those fed *O. ostertagi* only. Lambs appeared to be poor hosts for *O. ostertagi* as, P.M., three lambs were found to harbour only a few and two had none. These lambs showed no clinical evidence of *O. ostertagi* infection whereas an experimentally infected calf did. The worms recovered from the lambs were stunted as compared with those from the calf.—T.E.G.R.

BURROWS, R. B. (1959). The anthelmintic effect of buphenium on *Ancylostoma caninum*.—*J. Parasit.* 44, 607-610. [Author's summary modified.] 2160

Various buphenium salts given to naturally

infected dogs and cats in single doses of over 20 mg./kg. gave 99.4% clearance and single doses of 20 mg./kg. or less gave 94.1% clearance of *Ancylostoma caninum*.

About two-thirds of roundworms (*Toxocara*) were killed by a single dose of 50 mg./kg. or over, but only about a quarter were killed with lower doses. These compounds were only slightly effective against *Trichuris vulpis* and ineffective against 3 species of tapeworms.

One *Physaloptera* infection was treated and 50% of the worms were killed with a single dose of 50 mg./kg. of buphenium chloride.

In dogs, the only side effects noted were occasional nausea and vomiting.

MOLNÁR, I. (1958). Adatok a syngamosis gyógykezeléséhez. [Treatment of syngamosis.]—*Mag. állator. Lapja* 13, 282-283. [In Hungarian. Summaries in English and Russian.] 2161

565 chickens with *Syngamus trachea* infection were treated by inhalation of barium antimonyl tartrate for 10-12 min. 354 chickens were clinically cured, the condition of 180 chickens improved as a result of the treatment, while 31 of the birds died. M. gives a detailed description of the apparatus which he constructed and could use on 15-25 birds at a time. It can be home-made, is cheap and requires no skilled labour for operation.—A. SEBESTENY.

SCHANZEL, H. (1958). Vliv teploty a vlhkosti na exogenní larvy plícňívek ovčí. [Effect of temperature and humidity on exogenous lung-worm larvae of sheep.]—*Sborn. vys. šk. zemědělsk. les. Fak., Brno, Ser. B.* 6 (27), 213-218. [In Czech. Summaries in German and Russian.] 2162

Larvae of *Dictyocaulus filaria* were grown in heat sterilized sheep faeces. At 10°C. they survived a period of observation of seven weeks without moulting. At 15° to 17°C. they moulted first on the 4th and again on the 6-8th day and lived up to 66 days. At 20° to 22°C. they moulted on the second and 4-5th day and lived up to 45 days. At 25° to 27°C. they moulted on the first and the third day, but lived only up to 33 days. When dried, first-stage larvae died within 24 hours, second stage within 48 hours, and third stage within 96 hours. Larvae of *Protostrongylus kochi* and *Muellerius capillaris* were more resistant to desiccation.—E.G.

I. VODRÁŽKA, J., SOKOL, J. & BERECKÝ, I. (1957/58). Príspevok k hodnoteniu hetrazánu ako antihelmintika u domácich zvierat. I. Zpráva. Sledovanie účinnosti proti Müllerius capillaris u oviec. [Evaluation of hetrazan

- as an anthelmintic. I. Efficacy against *Muellerius capillaris* in sheep.]—*Folia vet., Košice* 2, 135-145. [In Slovak. Summaries in English, German and Russian.] 2163
- II. VODRÁŽKA, J., BERECKÝ, I. & SOKOL, J. (1957/58). K otázce účinnosti emetínu při müllerioze oviec. [Efficacy of emetine against *Muellerius capillaris* in sheep.]—*Ibid.* 147-153. [In Slovak. Summaries in English, German and Russian.] 2164
- I. Single oral doses of 0.3-0.5 g. of hetrazan per kg. body wt., s/c doses of 0.2-0.3 g./kg. body wt., three oral doses of 1 g. each, or six of 0.5 g. each/kg. body wt., given at intervals of 24 hours, were ineffective against *Muellerius capillaris* infestation in an experiment involving 55 sheep.
- II. Three i/m doses of 3 mg./kg. body wt. each of 1% soln. of emetine hydrochloride, injected at intervals of 48 hours, cured *Muellerius capillaris* infestation in three sheep, reduced faecal excretion of larvae permanently in four, and temporarily in two. The anthelmintic was well tolerated.—E.G.
- ZENDULKA, M. (1959). *Hepatitis interstitialis chronica multiplex* ve vztahu k *hepatosis dietetica* u selat. [Chronic interstitial hepatitis and dietetic liver diseases in piglets.]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* 4 (32), 15-26. [In Czech. Summaries in German and Russian.] 2165
- The relationship between chronic interstitial eosinophilic hepatitis and migrating ascaris larvae was demonstrated experimentally in 32 piglets. Morphologically lesions were distinct from dietetic liver lesions. Larvae appeared in the liver 24 hours to 5 days after feeding of embryonated eggs.—E.G.
- SINGH, D., KRISHNASWAMI, A. K. & RAGHAVAN, N. G. S. (1958). A new microfilaria in the dog.—*Indian J. Malar.* 12, 89-92. 2166
- Dirofilaria repens*, *D. immitis*, and a new microfilaria were observed in blood smears from a dog in Orissa, India. Morphological details and measurements of all 3 microfilariae are given. The new one was present only in small numbers, and no definite periodicity was established. —M.G.G.
- CHODNIK, K. S. (1958). Histopathology of the aortic lesions in cattle infected with *Onchocerca armillata* (Filariidae).—*Ann. trop. Med. Parasit.* 52, 145-148. 2167
- Aortic lesions caused by this nematode were present in nearly all slaughtered cattle examined in Ghana [V.B. 28, 828]. Tunnels, apparently caused by the worms burrowing along the wall of the aorta, were a feature of the lesions. There were also nodules and cysts on the inside and outside of the vessel. The effect of the lesions on health was not known.—R.M.
- SCHAD, G. A., ALLEN, R. W. & SAMSON, K. S. (1958). The effect of Dow ET-57 on some sheep parasites.—*Vet. Med.* 53, 533-534 & 554. [Authors' summary modified.] 2168
- Five aged ewes were drenched with Dow ET-57 (O, O-dimethyl O-2, 4, 5-trichlorophenyl phosphorothioate) at the rate of 100 mg./kg. to determine the effect in removing *Thysanosoma*. Three of the treated animals also served to determine the effect on roundworms of the gastrointestinal tract. The compound appeared to be ineffective against tapeworms of the genus *Thysanosoma* and also against *Haemonchus*, *Ostertagia* (*Pseudostertagia*), *Trichostrongylus*, *Nematodirus*, and *Chabertia*.
- DOUGLAS, J. R., BAKER, N. F. & LONGHURST, W. M. (1959). Further studies on the relationship between particle size and anthelmintic efficiency of phenothiazine.—*Amer. J. vet. Res.* 20, 201-205. [Authors' summary modified.] 2169
- There was a linear relationship between the specific surface area of phenothiazine preparations and their anthelmintic efficiency, within the approximate range of 5,000 to 25,000 sq. cm. per g. This represents a range of about 1 to 10 μ mean particle diameter and 98 to 63% efficiency. Within these limits, an increase in specific surface area of 619 sq. cm. per g. increased efficiency by 1%. The anthelmintic efficiency of purified phenothiazine with a mean particle diam. of 4.8 μ was similar to that of a National Formulary preparation with a mean particle diam. of 1.9 μ .

See also absts. 2114 (Taschen disease and lungworms); 2141 (nematode ova in rabbit faeces); 2143 (cockroaches as vectors of diseases).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

- SHAT'KO, P. D., KORNILOVA, A. L. & KOROBKOVA, N. G. (1959). [Sarcomas in cows.]—*Veterinariya, Moscow* 36, No. 1. pp. 60-61. [In Russian.] 2170

In a herd of 130 cows near Novosibirsk 13 cows died or had to be slaughtered because of sarcomatosis of internal organs during the past 7 years, and most of them were very good

milkers. Details of 3 cases were given: (1) cow aged 11 years (had 9 calves) slaughtered after a month of nephritis and cystitis. Round-cell sarcomas were present in both kidneys, liver, and spleen and intestines; (2) cow aged 10 years (8 calves) died from post-parturient paresis. Sarcomas were found in various lymph nodes and in liver, spleen and intestines; (3) no history or age was given for this cow, but at slaughter sarcomas were found throughout the genital tract.

—R.M.

SULLIVAN, D. J. & ANDERSON, W. A. (1958). **Tumours of the bovine acoustic nerve—a report of two cases.**—*Amer. J. vet. Res.* 19, 848-852. 2171

Illustrated descriptions are given of tumours, arising within the cranium at the root of the acoustic nerve, which were found in a 6-month-old Hereford calf, which had shown incoordination and a tendency to move in circles, and in an 18 month-old steer, which had held its head to one side and circled to the left. The former tumour was oval in shape, measuring 1.5 inches in its greatest diameter, while the other tumour measured $2 \times 1 \times \frac{3}{4}$ in. The essential tumour cells were elongated, with fusiform nuclei, and had produced in the first tumour a loose reticular structure, and in the second a denser fibrous tissue. Neither tumour showed a definite palisading of nuclei. It is believed that these tumours were schwannomas.

The scarcity of reported cases of intracranial nerve root tumours in animals may be more apparent than real: in cases with clinical signs, these may be attributed wrongly to some other condition, while in silent cases, the tumours would be overlooked in the absence of routine P.M. examination of the brain.—

—E. COTCHIN.

LORD, G. H. (1959). **Hypertrophic osteoarthropathy in a dog—a clinico-pathological report.**—*J. Amer. vet. med. Ass.* 134, 13-17. 2172

In a 7-year-old male dog, an artificial heterograft was used in March 1955 to bridge an experimental defect in the abdominal aorta. From November 1956 onwards an angiosarcoma was noticed developing under the skin in the cervical region. This was resected in January 1957. Signs of hypertrophic pulmonary osteoarthropathy developed, and the dog was destroyed in May 1957. Extensive metastases of the angiosarcoma were found in the lungs, and there were two metastases on the mitral valve.

—E. COTCHIN.

BRODEY, R. S., MCGRATH, J. T. & REYNOLDS, H. (1959). **A clinical and radiological study**

of canine bone neoplasms. Part I.—*J. Amer. vet. med. Ass.* 134, 53-71. 2173

This is a very useful account of the clinical and radiological findings in a series of 75 bone tumours of skeletal origin of dogs. The diagnosis was made on histopathological grounds in 44 cases (in 23, there was necropsy plus histopathological examination; in 14, histopathological examination after radical surgical removal, with necropsy in 4; in 7, surgical biopsy) and on radiological grounds in 31 (necropsy, without histopathological examination, in one). The tumours were diagnosed as osteosarcoma (61), chondrosarcoma (8), fibrosarcoma (2), reticulum-cell sarcoma, haemangiosarcoma, hamartoma, mesenchymoma (each 1). The bones affected, in the 61 dogs with osteosarcoma, were radius (16), humerus (9), tibia (9), ribs (4), cranium (4), femur (4), ulna (3), turbinates (3), mandible (3), metatarsals (2), scapula, maxilla, sternum, cervical vertebra (each 1). The chondrosarcomas affected flat bones (ribs 2, turbinates 2, ischium, pubis, lumbar vertebra, each 1) and the fibula. The findings indicated that Great Danes, St. Bernards, and Irish Setters have a marked predisposition towards bone sarcoma development.

Some of the case histories, and radiological, clinical and pathological findings, are described, and the original article, which is well illustrated, should be consulted for details.—E. COTCHIN.

BRASS, W. & SCHULZ, L. C. (1958). **Anamnese und Kasuistik osteogener Geschwülste. [Osteogenic neoplasms in dogs.]**—*Dtsch. tierärztl. Wschr.* 65, 594-599. [Summary in English.] 2174

For the dogs with tumours of or related to bone examined P.M. in the 2-year period 1954-56, there was a history of previous trauma in 4 of 10 dogs with osteosarcoma, in none of 7 dogs with para-osteal sarcomas, and in 2 of 4 dogs with para-osteal carcinomas. It is suggested that different attempts at treatment before the neoplasm was recognized may have contributed to the development of the tumours, and it is suggested that optimal healing of traumatic lesions of bones should be aimed at with this possible development in mind. In passing, reference is made to an osteosarcoma of the humerus and scapula of a male hare, and to a spindle-cell sarcoma of the bone of the horn of a 3-year-old cow, developing after injury.—E. COTCHIN.

KOTZ, J. (1958). **W sprawie nowotworów sterczu u psów. [Tumours of the prostate in dogs.]**—*Weterynaria, Wroclaw* No. 4. pp.

155-161. [In Polish. Summaries in English and Russian.] 2175

A review of the literature and description of a tumour of the prostate in a cachectic, 5-year-old sheep dog. The tumour weighed 1,252 g. and metastases were numerous in the peritoneum, mesentery, liver, urinary bladder, ureters, spermatic cords and testes. Histologically it was a leiomyosarcoma with numerous haemorrhages and necrotic lesions with secondary calcifications. Occlusion of the urethra and right ureter was followed by hydronephrosis and uraemia.

—M. GITTER.

SCHWARTZ, S. O., SCHOOLMAN, H. M. & SPURRIER, W. (1959). **Studies in leukemia. IX. The induction of leukemia in adult C3H mice by means of cell-free brain filtrates.**—*J. Lab. clin. Med.* 53, 233-240. [Authors' summary modified.] 2176

Spontaneous leukaemia developed in a 22-week-old male C3Heb mouse. When tumour cell suspensions from this mouse, or from other mice to which leukaemia was transmitted, were injected into C3H substrains and C3H × 101 hybrids, leukaemia developed in 293 of 341 mice (86%).

Cell-free brain filtrates, similarly obtained

and inoculated into the same substrains, induced leukaemia in 309 of 373 mice (82%).

DAVIS, O. S. & GUSTAFSON, D. P. (1959). **Tissue culture of avian visceral lymphoid tumors and *in vitro* serial passage of the virus.**—*Amer. J. vet. Res.* 20, 119-126. [Authors' summary modified.] 2177

Neoplastic tissue from chickens with avian visceral lymphomatosis cultured *in vitro* showed marked proliferation and migration of lymphoblasts. Supernatant fluids from the cultures and Selas 03 filtrates of these fluids caused the typical disease in a high percentage of inoculated chickens. Many developed lymphoid tumours at the site of inoculation. The virus was propagated in cultures of normal chick embryo spleens for ten 3-day serial passages. Packets consisting of as many as ten lymphoblasts, as well as transitional forms, characterized the cells of the outgrowth of explants of chick embryo spleens after exposure to the virus. The cytoplasm of the fibroblasts was highly granular. Chickens which were inoculated with tissue culture material containing the virus but did not show evidence of the neoplastic disease 38 days later did not resist challenge with highly virulent tumour material.

NUTRITIONAL AND METABOLIC DISORDERS

BENZIE, D., BOYNE, A. W., DALGARNO, A. C., DUCKWORTH, J. & HILL, R. (1959). **Studies of the skeleton of the sheep. III. The relationship between phosphorus intake and resorption and repair of the skeleton in pregnancy and lactation.**—*J. agric. Sci.* 52, 1-12. [Authors' summary modified.] 2178

The ash content of the skeleton of Cheviot ewes fed a daily ration containing about 4.5 g. of phosphorus fell by 18.8% between mid-gestation and mid-lactation, and 2 months after the end of lactation the loss was fully replaced.

In ewes fed a daily ration containing about 1.5 g. of P the loss of skeletal ash was 39.9% at mid-lactation, and this was not replaced 2 months after the end of lactation. When the P intake was raised in mid-lactation from 1.5 to 4.5 g. repair was greater but was still not complete.

Resorption was greater in bones rich in cancellous tissue, *e.g.* the cervical vertebrae, than in those rich in compact tissue, *e.g.* the shafts of long bones, but when severe resorption took place significant losses were found in the shafts of long bones as well as in other bones.

Whole blood inorganic P values were very

low, particularly during lactation, in ewes on the low-phosphorus ration. When extra phosphorus was fed from mid-lactation onwards blood P values rose to normal in less than four weeks, a much more rapid recovery than that which took place in the skeleton.

Resorption of the skeleton in ewes on both moderate and low-phosphorus rations could be detected, using radiographs taken of the radius in the living animal at mid-lactation, and severe resorption found in ewes on the low-phosphorus ration could be distinguished readily from the milder resorption in ewes on the moderate-phosphorus ration.

HELGEBOSTAD, A. & MARTINSONS, E. (1958). **Nutritional anaemia in mink.**—*Nature, Lond.* 181, 1660-1661. 2179

Feeding experiments on 350 mink at the Norwegian Veterinary College revealed the presence of a factor, not yet identified, in coal-fish (*Gadus virens*) and raw whiting (*Gadus merlangus*) which caused anaemia when the fish were fed raw. Anaemia did not develop when these fish were fed cooked, or when other species of fish were fed raw. Anaemic mink recovered after

parenteral inj. of organic iron preparations, equivalent to 16 mg. organic iron a week.

—R.M.

HEAD, M. J. (1959). **Bloat in cattle.**—*Nature, Lond.* **183**, 757. **2180**

Serial samples of rumen fluid were collected through a permanent rumen fistula from cows eating freshly-cut clover and lucerne either in a stall or at pasture. The pH, eH, total volatile fatty acid content and ammonia nitrogen content of the samples were determined. Maximum foaminess occurred in the rumen 1–2 hours after the start of feeding; 4 hours later the foaminess had fallen to its original value. Foaminess was greater than that of rumen contents from cows eating grass or winter rations. It was emphasized that plant pectins and hemicelluloses might not be the sole factors responsible for the formation of foam in the rumen of cows with bloat.—R.M.

GUTIERREZ, J., DAVIS, R. E., LINDAHL, I. L. & WARWICK, E. J. (1959). **Bacterial changes in the rumen during the onset of feed-lot bloat of cattle and characteristics of *Peptostreptococcus elsdenii* n. sp.**—*Appl. Microbiol.* **7**, 16. **22**. [Authors' summary modified.] **2181**

The authors described changes in the bacterial flora of the rumen of 5 steers in which bloat had been induced by a diet rich in grain [see *V.B.* **24**, 3577]. 22 strains of lactic acid-producing streptococci and 24 strains of the LC type of organism [*V.B.* **27**, 1068] were isolated. The lactic acid-producing cocci were similar to *Str. bovis*. These and the LC type for which the name *Peptostreptococcus elsdenii* was proposed, multiplied during bloat. The role of these bacteria in the aetiology of bloat was discussed.

BROWNING, C. B., PARRISH, D. B. & FOUNTAINE, F. C. (1958). **Effect of feeding low levels of diethylstilbestrol on gestation and lactation of rats.**—*J. Nutr.* **66**, 321–332. [Authors' summary modified.] **2182**

Nineteen albino rats and their litters (168 animals) were used to study the effects of feeding diethylstilboestrol (0.6, 1.1, or 2.2 μ g./100 g. body wt./day) for three days before mating and during gestation and lactation.

It did not appear to have a measurable effect on conception or gestation. However, growth of the young was retarded, indicating decreased lactation in the dams. In weaned females from treated dams the uterus was not stimulated, indicating that oestrogens were not excreted by the mammary gland in detectable quantities.

FEIGENBAUM, A. S. & FISHER, H. (1959). **Influence of dietary fat on the incorporation of**

fatty acids into body and egg fat of the hen.—*Arch. Biochem.* **79**, 302–306. [Authors' summary modified.] **2183**

The fatty-acid composition of body fat was influenced by ingestion of either saturated or unsaturated fatty acids, but that of egg fat was influenced only by unsaturated acids.

UDALL, R. H., DEEM, A. W. & MAAG, D. D. (1958). **Studies on urolithiasis. I. Experimental production associated with feeding in steers.**—*Amer. J. vet. Res.* **19**, 825–829. **2184**

Significant increases in mucoprotein excretion, as measured by the hexosamine content of the precipitate formed in urine by phosphotungstic acid, were formed in the urine of steers when they were shifted from a lucerne hay ration to a fattening ration, when the concentrate to roughage ratio was increased from 4:1 to 8:1, and when the level of calcium in the ration was increased to 3 times the National Research Council's requirement. A high level of phosphorus produced a highly significant acidification of the urine and a significant reduction in the amount of calculi recovered from the bladder. Calculi had a high protein nitrogen content suggesting the presence of a mucoprotein matrix within the calculi. Predisposition to calculus formation in animals can probably be measured by the level of mucoproteins in the urine.—A. ACKROYD.

SPAÏS, A. G. (1958). **[Copper in the pathology of sheep and cattle.]**—*Epistēm. Epē. ktēniatrik. Schol., Thessaloniki* **2**, 253–294. [In Greek. Abst. from English summary.] **2185**

The disorders of copper metabolism encountered in swayback are discussed with comparison between the environments of grazing lands in Greece and other countries. The author suggests that excess of sulphide produced by excess sulphates in the rumen not only caused copper deficiency, but was also responsible for the lesions of the c.n.s. This hypothesis explained why certain salt-marsh areas in Greece produced swayback. [This paper has been published in French in *Rec. Méd. vét.* **135**, 161–194 (1959).]—D. S. PAPWORTH.

ANDREWS, E. D., HART, L. I. & STEPHENSON, B. J. (1958). **Vitamin B₁₂ and cobalt concentrations in livers from healthy and cobalt-deficient lambs.**—*Nature, Lond.* **182**, 869–870. **2186**

Livers were obtained from 5 groups of lambs kept in paddocks, in 4 of which the cobalt content of the pasture was low, and in the fifth adequate. Lambs in one of the Co-deficient paddocks had each received 7 mg. of Co weekly.

The concentration of vitamin B₁₂ exceeded 0.3 µg./g. in the liver of healthy lambs, and was less than 0.1 µg./g. in lambs with Co deficiency disease. The concentration of vitamin B₁₂ reflected the severity of the disease more closely than the concentration of Co. Most or all of the Co in the liver of healthy lambs not treated with Co was in the form of vitamin B₁₂, but in treated lambs most of the Co was in another form. The reason for this could be the inability of rumen organisms to convert more than a fraction of the administered Co to vitamin B₁₂. Co deficiency reduced the concentration of Co in the form of vitamin B₁₂ more than concentration of Co not in this form.—M.G.G.

ANDREWS, E. D., ISAACS, C. E. & FINDLAY, R. J. (1958). Response of cobalt deficient lambs to cobaltic oxide pellets.—*N. Z. vet. J.* 6, 140-146. 2187

One pellet weighing about 5.5 g. and containing 75% cobaltic oxide, given when lambs were 4 months old by a balling gun, was as effective as weekly doses of 7 mg. of cobalt in controlling cobalt deficiency disease in lambs over a 14-week period. The pellet caused no abnormalities macroscopically to the reticulo-rumen epithelium. Ten of the 12 pellets administered were recovered from the forestomachs; 7 showed whitish insoluble deposits consisting largely of calcium phosphate, but only one was thickly encrusted. Only traces of cobalt appeared to have been removed from the pellets during the 14 weeks. Whilst pellets may be of value on farms of low carrying capacity and in the diagnosis of cobalt deficiency disease in the field, at present cobalt top-dressing appears to be a cheaper method of control on high carrying capacity farms.—A. ACKROYD.

HOGUE, D. E. (1958). Selenium and muscular dystrophy.—*J. Amer. vet. med. Ass.* 133, 568. 2188

Selenium apparently prevents muscular dystrophy in lambs. In several trials, lambs born to ewes fed, during pregnancy, linseed oil meal (containing 1.1 p.p.m. of Se) and wheat bran were free from muscular dystrophy, whereas signs of the disease were seen in 20% to 60% of lambs born to ewes receiving the same roughage and raw beans (containing 0.012 to 0.08 p.p.m. of Se) or raw beans and diphenyl-*p*-phenylenediamine. Only one of 21 lambs developed muscular dystrophy when Se (1 p.p.m.) had been added to the ewes' ration, whereas 8 of 18 lambs from control ewes were affected.

—M.G.G.

SWINGLE, K. F., YOUNG, S. & DANG, H. C. (1959). The relationship of serum glutamic oxalacetic transaminase to nutritional muscular dystrophy in lambs.—*Amer. J. vet. Res.* 20, 75-77. [Authors' summary modified.] 2189

The concentration of glutamic oxalacetic transaminase was determined in the serum of about 380 lambs at 7 days and again at 14 days of age, and at other times between the ages of 3 days and 47 days. 77 lambs developed clinical muscular dystrophy or had lesions of the disease P.M. The results indicate that a rise in the concentration is a sensitive and early indication of muscular damage in this disease.

HICKEY, F. (1958). Muscular dystrophy in calves and lambs ("white muscle disease"). Review of causative theories and treatment.—*N. Z. Agriculturist* 11, No. 1, pp. 3-5. 2190

Muscular dystrophy provoked in calves by feeding diets low in vitamin E and high in unsaturated fatty acids and the type which affects pasture grazed animals in New Zealand (stiff lamb disease) appear clinically similar, but the latter syndrome is not due to a deficiency of vitamin E. Work on the naturally occurring disease in several countries has suggested that deficiencies of certain trace elements in the soil may be concerned and in New Zealand, top-dressing pastures with fertilizers containing iron has given complete protection for two years.

—A. ACKROYD.

DUTT, B., MAJUMDAR, B. N. & KEHAR, N. D. (1959). Vitamin A deficiency and urinary calculi in goats.—*Brit. vet. J.* 115, 63-66. [Authors' summary modified.] 2191

Adult male goats kept on an almost carotene-free diet complete in all other respects for about a year and eight months developed corneal ulceration, unthrifty condition, night blindness, elongated hooves and loss of hair. Histopathological examination revealed widespread keratinization of renal epithelium. Some of the renal tubules of the pelvis contained shed and degenerated epithelial cells. These degenerated cells had taken up the heamatoxylin stain which is suggestive of calcium deposition. From these findings it is suggested that vitamin A deficiency predisposes to urinary calculus formation. There may be other factors which precipitate the development of calculi in vitamin A deficient goats.

VALBERG, L. S., YOUNG, R. A. & BEVERIDGE, J. M. R. (1959). The effect of unsaturation of dietary fat and of antioxidants on the

development of liver damage. — *Canad. J. Biochem. Physiol.* **37**, 493-499. [Authors' summary modified.] **2192**

The addition of unsaturated fatty acids, even in small amounts, to diets low in vitamin E, selenium, and the sulphur-containing amino acids greatly accelerated the development of acute liver necrosis in rats. The production of this lesion was shown also to be affected in a similar manner by the nature of the dietary fat consumed immediately prior to the removal of protective substances such as the sulphur-containing amino acids; unsaturated fatty acids or lipid again acted as predisposing factors.

Gamma-tocopherol incorporated in the diet at a level of 0.02% and injected at a level of 1.5 mg./rat/day was as effective as alpha-tocopherol in preventing liver necrosis. The protective effect of gamma-tocopherol against the development of liver necrosis lends support to the thesis that alpha-tocopherol protects against liver damage by virtue of its antioxidant activity.

ROSENKRANTZ, H. (1959). **Studies in vitamin E deficiency. IV. The influence of steroid hormones on rabbit skeletal muscle.** — *J. biol. Chem.* **234**, 35-39. **2193**

The influence *in vitro* of some steroid hormones on skeletal muscle from normal and vitamin E-deficient rabbits was compared. To accomplish this, glycogen synthesis, lactic acid formation, and oxygen consumption were studied in the presence and absence of the steroid. It was found that deoxycortone (DOC) was a potent inhibitor of glycogen synthesis and oxygen consumption. Other steroid compounds had lesser effects. The inhibition occurred at the enzyme level, and evidence for the depressed sites was accumulated. A few experiments *in vivo* with DOC were also performed.

ROSENBERG, H. R. & CULIK, R. (1959). **Effect of alpha-lipoic acid on vitamin C and vitamin E deficiencies.** — *Arch. Biochem.* **80**, 86-93. **2194**

Alpha-lipoic acid is an essential nutrient for a variety of micro-organisms and functions as a constituent of enzyme systems involving oxidation of alpha-keto acids. In experiments with g.pigs the acid alleviated the signs of deficiencies of vitamins C and E, when it was administered by stomach tube every second day. It may have protected the vitamins from oxidative destruction.—R.M.

ANNISON, E. F. & LEWIS, D. (1959). **Thyroid metabolism in sheep during pregnancy.**—*J.*

agric. Sci. **52**, 79-86. [Authors' summary.] **2195**

The peripheral metabolism of thyroxine in sheep in pregnancy was investigated by measuring the rate of disappearance from blood of injected ¹³¹I-thyroxine. Only limited changes in thyroid metabolism during pregnancy were observed. The rate of turnover of thyroxine slightly increased, but this was not accompanied by increased levels of plasma protein-bound iodine (PBI), or thyroxine-binding protein.

In a 3.5-month foetus, the thyroid was active and a marked concentration of iodide by the foetus was observed. The significance of this activity could not be assessed in the absence of knowledge on the placental passage of iodide or thyroxine in the sheep.

Knowledge of thyroid metabolism is inadequate at present to explain any correlation between animal productivity and either hormone supplementation, or PBI concentration.

KIRTON, A. H. & BARTON, R. A. (1958). **Live weight loss and its components in Romney ewes subjected to L-thyroxine therapy and a low plane of nutrition.** — *J. agric. Sci.* **51**, 265-281. [Authors' summary and conclusions modified.] **2196**

Fifty Romney ewes were allocated at random to ten groups of five. The average live weight of the ewes was 147 lb. at selection and 135.5 lb. at the beginning of the 28-day experimental period. Three levels of L-thyroxine implants, viz. 150, 210 and 270 mg., were used on six groups, three of which were on a normal level of nutrition and three on a low level. One group was daily injected with 5 mg. L-thyroxine; one group was slaughtered at the commencement of the 28-day experimental period; one group was maintained for 28 days on a normal level of nutrition and another group was on a low level of nutrition for 28 days.

Live weight losses of up to 24.4 lb. for the low thyroxine (150 mg.) low-level group of ewes were recorded at the end of the 28-day period. The daily injection of 5 mg. L-thyroxine had to be modified because of two deaths.

Metabolic studies on a ewe injected daily with 5 mg. L-thyroxine for two periods each of 5 days, while the sheep had continuous access to hay, indicated that its oxygen consumption was increased by at least 50% and its respiration rate was at least doubled by this treatment.

Despite significant effects on live weight no effects could be demonstrated on carcass weight. The mean carcass wt. for all sheep was 61.8 lb. (range 43.1-78.8 lb.).

No significant effects were demonstrated

on the weight of either carcass fat or fat from any of the leg, half-loin or 9-10-11 rib-cuts or perirenal fat. The carcasses averaged 40.4% chemical fat (range 24.9-54.3%).

Thyroxine caused wool breaks at the skin surface in all ewes.

Microchemical iodine analyses of minced carcass samples indicate that there was unlikely to be sufficient thyroxine in the flesh to make it unfit for human consumption.

The proportion of water in the fat-free carcasses of the control ewes was 71.9%. This agrees well with the figure of 72-73% water which has been found by various workers to be a 'biological constant' in other species. The water percentage was significantly reduced by thyroxine treatment. This percentage was not correlated with weight or percentage of carcass fat.

Chemical analyses revealed that the proportion of water in the fat-free rib muscle tissue of the control ewes was 77.5%, which agrees with the figure given by Callow (1947) for fat-free boneless meat of frozen carcasses. The comparable figure for water content of rib-cut fatty tissue on a fat-free basis was 82.6%.

The bandsaw technique used in this study has made possible the chemical analyses of whole carcasses from large animals. The macrochemical procedures used permitted the analysis of six samples each of 50 g. per half carcass. The low standard errors of the means and coefficients of variation suggest that the methods adopted were satisfactory.

POTTER, G. D., TONG, W. & CHAIKOFF, I. L. (1959). The metabolism of I^{131} -labeled iodine, thyroxine, and triiodothyronine in the mammary gland of the lactating rat. — *J. biol. Chem.* **234**, 350-354. **2197**

This report deals with the following aspects of iodine metabolism in the rat mammary gland: (a) the transport of administered inorganic iodine into milk, and the form in which this iodine appears; (b) the effects of thyroidectomy and of thyroid inhibitors on the transport and organic binding of radioiodide by the mammary gland; and (c) the appearance of injected I^{131} -thyroxine and I^{131} -triiodothyronine in milk.

—R.M.

SAUER, F., DICKSON, W. M. & HOYT, H. H. (1958). Oxygen uptake in liver homogenates taken from normal and ketotic cows.—*Amer. J. vet. Res.* **19**, 567-574. **2198**

Liver biopsy samples from 10 normal lactating cows and from 2 cows with ketosis were homogenized and incubated and the rates of oxygen uptake were measured. The effects of acetate, glucose, propionate, butyrate, acetoacetate and other metabolites on the respiration of the homogenates were studied. The respiratory rate of the liver from the cows with ketosis was greatly decreased; samples taken at intervals of 2-3 weeks from one of the cows revealed a progressive increase in respiratory rate. The results indicated that the metabolic rate of liver may be greatly reduced during ketosis.—R.M.

DISEASES, GENERAL

TARKIEWICZ, S. (1958). Untersuchungen der Bauchhöhlenflüssigkeit beim Rinde. [**Properties of peritoneal fluid in cattle.**] — *Ann. Univ. M. Curie-Skłodowska, Sect. DD.* 1956 **11**, 315-335. [In German. Summaries in Polish and Russian.] **2199**

Peritoneal fluid was collected from 52 normal slaughtered cattle and from 70 cattle with various lesions, including 18 with chronic peritonitis. Volume was measured and some physical and chemical properties were studied. Average values for cell composition in healthy cattle were eosinophiles 24%, neutrophils 22.6%, lymphocytes 50%, monocytes 0.8%, epithelial cells 2.5%. The average protein content in healthy cattle was 1.6% (albumin 1.6% and globulins 0.4%). Changes in composition and properties during pregnancy, peritonitis and TB. were described.—R.M.

I. FRIED, K. & HRUDKA, F. (1957/58). Niektoré poznatky o enzootickom mozgovomiechovom ochorení koní na východnom Slovensku. IV. Laboratórne vyšetrenia vo vzťahu k etiológii choroby. [**Enzootic cerebrospinal disease in horses in Slovakia. IV. Laboratory examination and aetiology.**]—*Folia vet., Košice* **2**, 227-241. [In Slovak. Summaries in English, German and Russian.] **2200**

II. KÓŇA, E. (1958). O možnosti karence tiamínu pri enzootickom mozgovomiechovom ochorení koní (Motoške) na východnom Slovensku. [**An enzootic cerebrospinal disease in horses in Eastern Slovakia, possibly associated with thiamine deficiency.**]—*Vet. Čas.* **7**, 511-514. [In Slovak. Summaries in English, French, German and Russian.] **2201**

I. Faecal examination, forage analysis,

serum electrophoresis and blood counts were carried out and composition of cerebrospinal fluid and urine, haemoglobin and bilirubin levels, and sedimentation rate were studied to clarify the aetiology of an apparently non-infectious form of encephalomyelitis in horses. A variety of noxious plants present in forage samples, such as *Equisetum*, *Lathyrus*, *Vicia*, *Raphanus*, etc., and low food value forage may mean that nutritional or toxic factors are implicated. Titres of leptospiral antibodies, when demonstrable, were not high enough to justify a diagnosis of leptospiral infection. Infection with known neurotropic viruses was excluded serologically. Attempts to isolate a virus failed. The clin. picture, pathology and epizootiology of the disease has been described previously [*V.B.* 27, 3683].

II. The thiamine content of liver, heart, kidneys and skeletal muscles in a horse with an aetiological obscure enzootic cerebrospinal disease [*V.B.* 27, 3683, and preceding abst.] was 30–50% lower than that in three healthy horses, examined P.M. The possible role of vitamin B₁ deficiency in the aetiology was discussed. —E.G.

MAQSOOD, M. (1957). **Thyroid therapy of non-sweating in equines.**—*Proc. 9th Pakistan Sci. Conf., Peshawar* 1957. Part III. p. 123. [Abst. from author's abst.] 2202

A number of cases of non-sweating have been observed in racehorses and hard working tonga ponies in Lahore. The animals developed this condition in summer and remained non-sweaters even during winter. After administration of a daily dose of 10 to 15 g. of iodinated casein ("Protamone", containing 0.72% l-thyroxine) for about 4 to 8 days the treated animals started sweating.

ORTIZ, F., VIETO, P. L., BARBARESCHI, G. & MORERA, P. (1957). Sobre un tipo curioso de lesiones cutáneas en bovinos y equinos. (Nota previa). [On a curious type of skin lesion in cattle and horses.]—*Rev. Biol. Trop.* 5, 77-80. 2203

The lesion occurs on the body and starts as a subacute inflammatory process (leading to necrosis) and penetrates deeply into the affected tissue—in one case it reached the peritoneum. It is covered by a hard, dry crust closely adhering to the underlying tissue. Its size varies from 2–3 cm. to 20–40 cm. in diam. Lesions develop on other parts of the body by contact of healthy tissue with lesions or their exudate. Of 60 animals affected 48 (30 cattle, 13 horses and

5 mules) died. The disease is under investigation and further details will be published in due course. —T.E.G.R.

MARTINI, I. (1958). L'edema dei bovini. [Brisket disease in cattle.]—*Vet. ital.* 9, 769-777. 2204

A general account dealing with the clinical symptoms, P.M. findings, differential diagnosis and treatment of the condition.—T.E.G.R.

SCHULTZE, A. B. (1959). **Influence of adrenaline administration on some blood constituents in Holstein calves.**—*J. Dairy Sci.* 42, 166-169. [Author's summary modified.] 2205

The effect of adrenaline upon leucocyte, and eosinophile count, and upon glucose, haemoglobin, and haematocrit levels in calves was studied; also, the difference in response between individual calves. No significant changes were apparent from this treatment in leucocyte, haemoglobin, eosinophile, or erythrocyte values, though certain trends were apparent. Glucose and haematocrit values were significantly increased by the treatment. Only haematocrit change following treatment with adrenaline appeared to offer promise as an indicator of individual calf response to stress.

BUGEAC, T. & DRĂGHICI, D. (1958). Contribuții la studiul leziunilor anatomice și histologice în boala edemelor la porci. [Anatomical and histological study of oedema disease of pigs.]—*Anu. Inst. Pat. Igien. anim. București* (1957). 8, 277-290. [In Roumanian. Summaries in French and Russian.] 2206

A description of P.M. findings in ten pigs with oedema disease, illustrated by photographs of gross lesions in colon and stomach, and photomicrographs of sections of the cerebral cortex, the cerebellum, the mesenteric lymphatic ganglion and the gastric intestinal mucosa.—E.G.

GÓRSKA, Z., KASZUBKIEWICZ, C., KOTZ, J., KUPROWSKI, M., MADEJ, Z., MICHALSKI, Z. & ZAKRZEWSKI, A. (1958). Badania morfologiczne przy tzw. zakaźnym zapaleniu żołądka i jelit u świń (*Gastro-enteritis infectiosa; Dysenteria suum*). [Morphology of lesions in porcine infectious gastro-enteritis.]—*Roczn. Nauk rol.* 68, 249-262. [In Polish. Summaries in English and Russian.] 2207

This communication is based on 110 necropsies of pigs, 8–12 weeks old, which showed clinical symptoms of gastro-enteritis or dysentery. The authors consider hyperaemia of the stomach and colon, followed by rapidly spread-

ing necrosis, as pathognomonic. Histologically the lesions consisted of passive congestion, thrombo-phlebotomy and coagulative necrosis. The necrosis is not caused by inflammation though inflammatory changes may appear later on as a defensive mechanism of healthy tissue against the spreading necrosis. As a result of these findings, the non-infectious afebrile character of the disease, rapid course, uncertain aetiology and unsuccessful treatment, the authors are of the opinion that swine dysentery is an allergic condition and not an infectious disease. A review of literature on porcine gastro-enteritis and swine dysentery is given.—M. GITTER.

VAN DEN BORN, J. M. (1958). De bestrijding van atrofische rhinitis infectiosa van het varken in Nederland. [Control of atrophic rhinitis in pigs in the Netherlands.] — *Tijdschr. Diergeneesk.* **83**, 915-919. [In Dutch. Summaries in English, French and German.] **2208**

The disease was made notifiable in July 1958. When a positive diagnosis was made, all pigs on the premises were purchased by the state and sent for slaughter. Affected carcasses were destroyed. The premises were disinfected and fresh pigs were not introduced until a month had elapsed. During July-September 1958 7,990 pigs from 139 farms were slaughtered on account of atrophic rhinitis.—R.M.

LEONE, G. (1957). Su una particolare forma di epatosi nel suino. [An unusual liver disease of pigs.]—*Ann. Fac. Med. vet. Torino* **7**, 79-89. [Summaries in English, French and German.] **2209**

The condition was observed P.M. in three pigs (weighing 40-80 kg.), which died after inappetence and a temp. of 41.5°C. for two days, and in an apparently healthy slaughter pig weighing 250 kg. The animals were fed mainly on swill. The liver was slightly enlarged, soft, emphysematous, congested and showed regressive changes. It crepitated on section and a frothy serous fluid exuded from the cut surface. The microscopic changes are described. Coliform organisms were isolated from the liver.

—T.E.G.R.

ANON. (1958). [Dyspnoea of swine in China.] — *Acta vet. zootech. sinica* **3**, 1-13. [In Chinese. Abst. from English summary.] **2210**

An investigation of "gasping disease" of pigs in 11 provinces of China revealed the presence of bronchopneumonia similar to that associated with virus pneumonia in the United Kingdom. The causal agent had not yet been identified.—R.M.

KOWALCZYK, T., ANDERSON, R. A., SIMON, J. & BAKER, E. D. (1958). Fibrous dysplasia of the bone in swine. — *J. Amer. vet. med. Ass.* **133**, 601-605. **2211**

The authors describe a condition of the bones in pigs which they identify as osteodystrophia fibrosa cystica. They conclude that the cause of the condition is not clear, and the authors do not appear to be clear in their own minds as to the pathological differentiation of osteodystrophia fibrosa cystica and osteodystrophies of nutritional origin.—R. N. FIENNES.

SCHOOP, G. & SCHMITT, J. (1958). Zur Frage der pränatalen Ferkelsterblichkeit und ihrer Ursachen. [Prenatal mortality in piglets and its causes.]—*Dtsch. tierärztl. Wschr.* **65**, 482-489. [Summary in English.] **2212**

Ovaries and uteruses of 68 pregnant sows contained 905 corpora lutea but only 652 foetuses. Losses were highest before and during the early embryonic stage and during the last month of pregnancy. The incidence was higher in winter and spring. As a rule only about half the ova developed and survived till parturition. In some foetuses pathological processes were indicative of vitamin A deficiency. In the material examined there was no evidence of lethal factors or infectious diseases. No definite conclusions were reached as to the primary cause of prenatal mortality, but nutritional factors appeared to play a role.—E.G.

FERREIRA-NETO, J. M. (1959). The value of some liver function tests in dogs. — *Thesis, Cornell* pp. 69. **2213**

There is a dearth of information as to the value of liver function tests in the dog. The author attempts to evaluate certain of these tests in the diagnosis and prognosis of disease in the dog.

The bromsulphalein clearance test proved impractical. Of the tests used, the bromsulphalein test and uric acid determination proved to be the most practical. The Takata-Ara reaction was weakly positive in only 50% of the cases with liver lesions, but proved helpful in the diagnosis of chronic conditions.

In normal dogs, cholinesterase activity was from 26 to 69, with an average of 43. The activity of cholinesterase was low in two cases of liver disease, and high in one case.

—H. L. GILMAN.

ANDERSEN, A. C. & SULTZ, F. T. (1958). A developmental cataract in the dog. — *Proc. Xth int. Congr. Genet., Montreal 2*, (Absts.) 7-8. [Authors' abst. modified.] **2214**

Out of 1,129 purebred Beagles observed 1 male showed complete bilateral cataract when 5 months of age. Matings with 5 normal dams produced 19 offspring with complete bilateral cataract, 2 with partial bilateral cataract, 1 nearly normal, and 3 normal. Puppies were killed for histological study between 41 and 60 days of age.

Three defects were present: microphthalmia, retinal folding, and lens opacity. The cataract seemed to be a defect in the development of secondary lens fibres. Neither sex linkage nor an autosomal recessive was indicated.

PODGURNIAK, Z. (1958). *Obraz anatomopatologiczny przy porażeniu prądem elektrycznym u zwierząt. [P.M. appearance and histopathology in electrocuted animals.]—Roczn. Nauk rol.* **68**, 263-276. [In Polish. Summaries in Russian and English.] **2215**

23 dogs and 5 cats were electrocuted by alternating current of 220 volts. The only abnormalities noted on P.M. and histological examinations were congestion of internal organs and, in two young dogs, petechiae under the pleura and in the renal cortex. No evidence of autolytic changes in the pancreas, regarded as pathognomonic by Kaplan, was found. In 5 horses electrocuted accidentally petechiae and ecchymoses were found in the brain, lungs, spleen and kidneys, and degenerative changes in the brain. In one kidney section, tubular and glomerular epithelium was found in the lumen of a vein and P. is of the opinion that in animals which survive the electric shock, torn fragments of kidney tissue may result in fatal embolism.

—M. GITTER.

SEIGNEUR, L. J., TEST, L. D. & BUSTAD, L. K. (1959). *Use of scintillation detector for determining I^{131} accumulation in the thyroid glands of swine.*—*Amer. J. vet. Res.* **20**, 14-17. **2216**

Pigs fed only 70% of a normal ration accumulated less I^{131} in the thyroid gland than pigs fed the full ration, whether the isotope was given in a single dose or over a period. In both groups the maximum concentration of I^{131} was attained 20-30 hours after a single dose of the isotope. The half-life of I^{131} in the thyroid gland was 6 days. When I^{131} was fed daily, the concentration in the thyroid gland stabilized in 21 days, independently of the amount of food consumed.—M.G.G.

PARKINSON, J. E. (1959). *The effect of internal emitters on red cell survival in beagle dogs.*—*Radiation Res.* **10**, 63-66. **2217**

Anaemia developed in 37 beagles 1-6 months after a single i/v inj. of either mesothorium, radiothorium, radium or plutonium in doses of from 0.81 to 2.5 μ c/kg. body wt. Red cell survival, measured by the radiochromium method, did not differ much from that of normal controls, indicating that the anaemia was not caused by haemolysis.—R.M.

HARTWIG, Q. L., MELVILLE, G. S., LEFFINGWELL, T. P. & YOUNG, R. J. (1959). *Iron-59 metabolism as an index of erythropoietic damage and recovery in monkeys exposed to nuclear radiations.*—*Amer. J. Physiol.* **196**, 156-158. **2218**

Severe depression of erythropoiesis was demonstrated within 24 hours of injection of radio-iron into monkeys exposed to radiation from a nuclear explosion. Decreases in the iron content of plasma occurred shortly before death.—R.M.

RUSSELL, W. L., RUSSELL, L. B. & KELLY, E. M. (1958). *Radiation dose rate and mutation frequency. The frequency of radiation-induced mutations is not, as the classical view holds, independent of dose rate.*—*Science* **128**, 1546-1550. **2219**

Male mice were continuously exposed to a low intensity of radiations from radiocaesium (about 90 r a week) for about 10 weeks, and were mated to females immediately at the end of the period of radiation. Rates of mutation of spermatogonia were determined. The results indicated that genetic hazards under some conditions of radiations may not be as great as those estimated from mutation rates after acute irradiation. However, although the mutation rates resulting from low intensities of radiation were reduced, they were still appreciable.—R.M.

SIKOV, M. R. & NOONAN, T. R. (1958). *Anomalous development induced in the embryonic rat by the maternal administration of radiophosphorus.*—*Amer. J. Anat.* **103**, 137-161. [Authors' summary modified.] **2220**

Pregnant female rats were injected i/p with radiophosphorus after 6, 8, 9, or 10 days of gestation and were killed at intervals after injection. Gross examinations were made of all the foetuses and some were examined histologically. Many cases of anomalous development were found and are described.

When the results were compared with those of acute X-irradiation, distinct qualitative and quantitative differences were found. Possible explanation for these is advanced but no single factor can be designated as responsible for the difference.

LLOYD, H. E. D. (1959). **Arteriosclerosis in certain wild animals dying in captivity.**—*J. comp. Path.* 69, 98-104. [Author's conclusions modified.] 2221

An account is given of certain aspects of spontaneous aortic disease in 36 captive wild animals (5 mammals and 31 birds). Mucoid changes similar to those described in human arterial disease were common. There was also some evidence that the arterial changes were the result of an episodic process similar to that described in certain cases of human arteriosclerosis. Morphological changes which supported this belief, such as the presence of superficial foam-cell accumulation, mural thrombosis formation and "layering" in the plaque, are discussed.

See also abst. 2311 (book, surgery and anatomy).

POISONS AND POISONING

WASSERMANN, M., MIHAIL, G. & COJOCARU, V. (1958). **Recherches hématologiques dans l'intoxication saturnine expérimentale des animaux homéothermes, à l'aide du microscope à contraste de phases. [Haematological studies in experimental lead poisoning in homoeothermic animals with the aid of phase contrast microscopy.]**—*Arch. Mal. prof.* 19, 233-242. 2223

An account is given of results of phase contrast microscopy of the blood cells in experimental lead poisoning in rabbits and pigeons; reference is also made to g.pigs. The technique used and the changes observed in the blood cells are described. This method is considered superior to dark ground or other illumination methods as it gives a detailed picture of unstained living cells and the pathological changes in the r.b.c. and w.b.c. are more clearly defined. There are some good photographs.—T.E.G.R.

BOHOSIEWICZ, M. (1958). **Laboratoryjne badania zatruc bydła solą kuchenną. [Laboratory research on sodium chloride poisoning in cattle.]**—*Weterynaria, Wrocław* No. 4. pp. 91-101. [In Polish. Summaries in English and Russian.] 2224

An account of 15 outbreaks and individual cases of sodium chloride poisoning. The clinical symptoms were dullness, salivation, lachrymation, diarrhoea, severe thirst, drop in milk yield, ataxia and convulsions. P.M. findings included congestion of the rumen mucosa, haemorrhagic abomasitis and clay colour friable liver though in some instances no lesions were found. Despite marked fluctuations of chloride levels, B. considers values of over 0.36% Cl in the contents of

Other features peculiar to animal arteriosclerosis, such as the formation of cartilage, are noted.

BAJUSZ, E. (1959). **Effect of hormones upon regression of muscle atrophy of nervous origin.**—*Endocrinology* 64, 262-269. [Abst. from author's abst.] 2222

The effect of hormones upon the regression of muscle atrophy of nervous origin was studied in young rats.

Growth hormone, methyltestosterone, oestradiol and thyroxin promoted the rate of regression subsequent to re-innervation. Treatment with cortisol or 17-ethyl-19-nor-testosterone, at the high dose levels used, exerted an opposite effect, while deoxycorticosterone had no influence.

rumen, abomasum and small intestine as suspicious of salt poisoning. The chloride levels in the contents of the digestive tract of animals affected with sodium chloride poisoning vary considerably and depend on the amount and form of the ingested salt, the time between ingestion and laboratory examination and the water uptake following the ingestion of salt. [See also *V.B.* 28, 888.]—M. GITTER.

SHONE, D. K., PHILIP, J. R. & CHRISTIE, G. J. (1959). **Agalactia of sows caused by feeding the ergot of the bulrush millet, *Pennisetum typhoides*.**—*Vet. Rec.* 71, 129-132. [Authors' summary modified.] 2225

The agent responsible for the complete inhibition of the development of the mammary glands of sows in the last few weeks of pregnancy, and the resultant agalactia and heavy mortality of piglets in Southern Rhodesia was an ergot fungus parasitising bulrush millet (*P. typhoides*).

The losses of piglets as a result of this condition during 1953 to 1957 cannot be estimated, but in one district the losses over a 4-month period were 675.

The general good health of the affected sows and the absence of other symptoms usually associated with ergot poisoning, coupled with the limited information available on the alkaloids of the ergot of *P. typhoides*, suggest that these alkaloids may be different from those normally found in ergot.

POULSEN, E. (1958). **Forgiftning med myrosinasefri sennepsskrå hos kvaeg. [Poisoning of cattle by myrosinase-free mustard seed**

cake.] — *Nord. VetMed.* 10, 487-497. [In Danish. Summaries in English, French and German.] 2226

Mustard seed (*Brassica juncae*) cake imported into Denmark caused poisoning in 99 cattle in 14 herds, and 27 cattle died or had to be slaughtered. The smallest lethal dose was 300 g. of cake (containing 2.5 g. of allyl mustard oil), but some cattle tolerated 500 g. without developing toxic symptoms. Poisoning occurred only when kohlrabi was fed with the cake: the myrosinase in kohlrabi was probably responsible for the liberation of allyl mustard oil from the cake. The oral toxic dose of allyl mustard oil for cattle was 2-3 mg./kg. body wt., while the lethal dose was 5-20 mg./kg.—R.M.

RIGDON, R. H., FERGUSON, T. M., MOHAN, V. S. & COUCH, J. R. (1959). *In vivo* production of a ceroid-like pigment in chickens given gossypol.—*Arch. Path.* 67, 94-101. [Authors' summary modified.] 2227

Gossypol from the pigment glands of cottonseed, when injected i/m in chicks, causes necrosis of the muscle. Accompanying this there occurs a ceroid-like pigment. This pigment is the same as that resulting from ingestion of gossypol by chickens. The pigment is phagocytized locally by macrophages. It accumulates in the liver and slowly disappears. The mechanism of removal is not known; however, some of the pigment enters the biliary tract. It is suggested that the lethal effects produced by gossypol may result from its action on cardiac muscle and r.b.c.

PHILIP, J. R., JACKSON, J. J. & SHONE, D. K. (1958). *Sarcostemma viminale* poisoning in sheep and cattle.—*J. S. Afr. vet. med. Ass.* 29, 319-320. [Authors' summary modified.] 2228

The toxicity of *S. viminale* from Enkeldoorn, Southern Rhodesia, was established by the death of a sheep within six hours of being dosed with 514 g. of fresh ground-up material. The clinical symptoms and the lesions are described.

The lesions in four cattle whose deaths were attributed to the consumption of this plant are described.

PETERS, R. A., WAKELIN, R. W., MARTIN, A. J. P., WEBB, J. & BIRKS, F. T. (1959). Observations upon the toxic principle in the seeds of *Dichapetalum toxicarium*. Separation of a long-chain fatty acid containing fluorine.—*Biochem. J.* 71, 245-248. [Authors' summary modified.] 2229

The main toxic principle in the seeds of ratsbane (*D. toxicarium*) behaves as a long-chain fatty-acid containing fluorine. Injected into rats, or administered in the food, it induced the accumulation of citric acid, especially in the heart. The toxicity is due presumably to a conversion into fluorocitric acid. With kidney particles from the g.pig, the fluoro fatty acid fraction induced the accumulation of citric acid *in vitro*.

LUCAS, J. M. S. (1958). Toxic effects produced by pyrimethamine in chickens and their antagonism by folic acid.—*Nature, Lond.* 182, 1449. 2230

Pyrimethamine (20 p.p.m.) in the food of chickens caused a significant depression in weight gain and a macrocytic, hyperchromic type of anaemia. This apparent indication of a folic acid deficiency was reversed by folic acid injections.—S. BRIAN KENDALL.

MORAILLON, P. (1958). Intoxication d'un troupeau de moutons par le toxaphène. [Toxaphene poisoning in a flock of sheep.] —*Rec. Méd. vét.* 134, 449-452. [Summaries in English and Spanish.] 2231

Symptoms similar to those previously described for toxaphene poisoning were seen in a flock of 35 ewes and 10 yearlings; a ewe and a yearling died. Twenty days previously 75 litres of a 2.5% emulsion of toxaphene had been discharged onto the pasture from a faulty compressor which was being used for crop spraying. It had rained three times between this accident and the occurrence of the poisoning, which took place the day after the sheep were introduced to the pasture.—R.M.

BEKKER, P. M. (1958). Filmvertoning en verduideliking in verband met B.H.C. vergiftiging as gevolg van emulsies wat breek. [Toxicity arising from the "breaking" of insecticide emulsions.]—*J. S. Afr. vet. med. Ass.* 29, 299-301. [In Afrikaans. English summary modified.] 2232

The new organic insecticides can be dangerous to animals if emulsions "break". Types of mixtures where "breaking" occurs are (a) wettable powders; and (b) mixtures of two toxaphene or two BHC or a BHC and toxaphene emulsion.

GLÖMME, J. & SWENSON, A. (1958). Studies on the risks associated with the use of parathion-impregnated gauze strips in fly control.—*Brit. J. industr. Med.* 15, 62-66. 2233

The cholinesterase activity of r.b.c. (AChE)

and of the plasma (BChE) of farm workers was not affected by the use, over a period of one month, of gauze strips impregnated with parathion for fly control in cowsheds. In g.pigs at a temp. of 25°C. or over and with ventilation below 2.5 air changes per hour, exposure to impregnated strips caused reduced BChE; this reduction was stabilized after exposure for 7 to 14 days. AChE, which is low in g.pigs, was not estimated.—T.E.G.R.

BAKER, A. H., WHITNEY, G. F. H. & WORDEN, A. N. (1959). **The toxic hazard associated with continuous-flow heat-volatilized insecticidal and acaricidal aerosols.**—*Lab. Pract.* **8**, 3-10 & 26. [Authors' summary modified.] **2234**

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

SPECTOR, W. G. (1958). **Substances which affect capillary permeability.**—*Pharmacol. Rev.* **10**, 475-505. [Author's conclusions modified.] **2235**

At least three important tasks face investigators: (1) the elucidation of that partly hypothetical system of proteins or peptides which may sustain increased capillary permeability in inflammation; (2) the investigation of the structural and metabolic changes in the capillary wall which lead to increased permeability; (3) the establishment of the physical or chemical mechanisms whereby compounds which increase capillary permeability exert their effect. It cannot be said that the attainment of any of these objectives is in sight.

HAZELWOOD, R. L. (1958). **The peripheral action of tolbutamide in domestic fowl.**—*Endocrinology* **63**, 611-618. **2236**

The studies presented in this paper indicate that the avian response to tolbutamide administration is regulated primarily through extrapancreatic and extrahepatic mechanisms.—R.M.

VERGE, J. & PLACIDI, L. (1958). **Contribution à l'étude de l'action des antibiotiques sur le sang et la circulation. L'auroémicine chez le porc. Clinique et expérimentation. [Action of chlortetracycline on blood and circulation of pigs.]**—*Rev. Immunol.* **22**, 36-43. **2237**

Repeated injections of this antibiotic caused a condition which commenced with congestion and swelling of the ears and feet and terminated fatally with anal and nasal haemorrhages and moist gangrene of the ears and toes. One such

Small mammals, birds and laboratory workers were exposed to the output of continuously operated parasiticide vaporizers volatilizing aldrin or azoxybenzene or one of three levels of a mixture of lindane with DDT. Exposure lasted between 178 and 386 days. Mouse fur remained free from lindane but the feathers of budgerigars accumulated a large amount. Budgerigars did not survive at the highest dose of the lindane/DDT mixture which had a mean value of 0.754 g.d.t. (g./day/1,000 cu. ft.). At the lower dose levels of the mixture (0.531 and 0.224 g.d.t.) and at doses of 0.5 g.d.t. of aldrin and 0.429 g.d.t. of azoxybenzene no deleterious effects were observed. Rats, dogs, g.pigs, hamsters and human beings did not suffer any detectable harm.

pig received 6 g. chlortetracycline, divided into 9 injections given over 3 days. Another (weighing 50 kg.) received the same dosage in 3 days without any harmful effect, while a third (weighing 20 kg.) developed the same lethal syndrome after 3 injections given within 48 hours, amounting to 3 g. of antibiotic. There was thus considerable variation in the sensitivity of individual pigs to large doses of chlortetracycline. The first signs of circulatory disturbance were not observed until 12-15 days after the end of treatment.—R.M.

SOBEK, V., JANKU, I., LOJDA, Z. & WENKE, M. (1958). **Nebennierenrind-Deaktivierung nach chronischer Chlortetracyclinzufuhr bei Ratten. [Atrophy of the adrenal glands after prolonged administration of chlortetracycline to rats.]**—*Arch. int. Pharmacodyn.* **115**, 397-401. [In German.] **2238**

Ten rats were given food containing 0.01% chlortetracycline for a month. 10 rats were kept as untreated controls. At the end of the month the adrenal glands of the treated rats weighed less than those of the controls. Histologically, the intermediate zone appeared to be absent in treated rats.—R.M.

POTTER, B. J. (1958). **Haemoglobinuria caused by propylene glycol in sheep.**—*Brit. J. Pharmacol.* **13**, 385-389. [Author's abstr. modified.] **2239**

Haemoglobinuria occurred in sheep anaesthetized by an i/v injection of pentobarbitone sodium containing propylene glycol: an equivalent dose failed to cause haemoglobinuria in

rabbits. I/v inj. of an aqueous solution of 20% propylene glycol caused haemoglobinaemia and haemoglobinuria in sheep. Neither distilled water nor 20% glycerol in water administered under identical conditions produced these effects.

Haemoglobinuria occurred on some occasions when an aqueous 20% soln. of propylene glycol was administered to sheep after an inj. of saline, but never when a soln. of 20% propylene glycol prepared with normal saline was injected. It is suggested that saline may protect against the haemolytic action of propylene glycol in sheep and that propylene glycol should be avoided as a menstruum for pharmaceutical preparations to be used for injection into the blood stream of these animals.

CLIFFORD, D. H. (1958). Observations on effect of preanesthetic medication with meperidine and promazine on barbiturate anesthesia in an ocelot and a leopard.—*J. Amer. vet. med. Ass.* 133, 459-463. 2240

The author experimented with promazine hydrochloride and meperidine (pethidine) for pre-anaesthetic medication prior to sodium pentobarbitone, in an ocelot and a leopard. The latter was anaesthetized three times. The last time in place of pentobarbitone, thiopentone-pentobarbitone was used. In the ocelot 30 mg. promazine and 75 mg. pethidine were injected s/c. In the first experiment in the leopard promazine (1,000 mg.) was injected i/m, and on the other two occasions 500 mg. i/m. The pre-anaesthetic agents in every case reduced struggling, facilitated i/p inj. in the ocelot and i/v inj. by the tail vein in the leopard. This is an important result because both smaller and larger wild cats come near to respiratory paralysis before all reflexes are abolished.—R. N. FIENNES.

GALLEY, A. H. & LERMAN, L. H. (1959). New technique with hydroxydione. Experiences with "Presuren".—*Brit. med. J.* February 7th, 332-337. [Authors' summary modified.] 2241

A new hydroxydione, presuren, is readily soluble in water, physiological saline, or procaine solutions. Pain may be caused when a 10% solution is injected intravenously, but this can be eliminated by using 0.25% or 0.5% procaine or lignocaine as the solvent.

With reasonable doses respiratory depression is much less than with comparable doses of thiopentone. Hydroxydione rapidly depresses the laryngeal and bronchial reflexes; this makes it the anaesthetic of choice for bronchoscopies and laryngoscopies.

Falls in blood pressure were roughly of the same magnitude, dose for dose, as when hydroxydione is given in weak solution by an intravenous drip; on the other hand, increase in pulse rate was very much less common.

Presuren minimizes the usual post-operative fatigue and produces a sense of well-being during the recovery period.

AMMANN, K. (1958). Hauttransplantation bei Pferd und Rind. [Skin transplantation in horses and cattle.]—*Med. Veeartsenijschool Ghent* 2, No. 2, pp. 3-17. [In German. Summaries in English and French.] 2242

An illustrated account of experience at the Zürich veterinary school on the treatment of skin wounds by transplanting multiple small grafts into granulation tissue.—R.M.

JUSZKIEWICZ, T. (1958). Badania nad właściwościami leczniczymi chlorofilu III. Próby porównania wpływu chlorofilu, hematoporfiryny, protoporfiryny, witaminy B₁₂ i penicyliny na gojenie się doświadczalnie zakażonych ran ropiejących. [Therapeutic properties of chlorophyll. III. Effect on healing of infected wounds.]—*Roczn. Nauk rol.* 68, 277-291. [In Polish. Summaries in English and Russian.] 2243

Ointments containing 4-pyrrol substances structurally similar to hemin (chlorophyll, haematoporphyrin, protoporphyrin and vitamin B₁₂) speeded the healing of experimentally inflicted, suppurating wounds in rabbits. In the early stages, during the development of the infection and suppuration, ointments containing protoporphyrin and chlorophyll were very efficacious; J. ascribed this to the antibacterial properties of these compounds. During granulation and growth of surface epithelium all four ointments speeded healing but again chlorophyll and protoporphyrin were the most efficacious. J. is of the opinion that these compounds should find general application in wound treatment.—M. GITTER.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

GOLDSBERRY, S. & CALHOUN, M. L. (1959). **The comparative histology of the skin of Hereford and Aberdeen Angus cattle.**—*Amer. J. vet. Res.* **20**, 61-68. **2244**

Skin specimens were taken from 24 areas on each of 2 males and 2 females of each breed. Some breed and sex differences were noted. The skin of Herefords was the thicker; the skin of male Aberdeen Angus cattle was thicker than that of the females. Detailed description of the epidermis and dermis is given. The thickest epidermis was on the muzzle. Epidermal pigment evaluation revealed breed but not sex differences; pigment granules in the Aberdeen Angus were fine and black, in the Hereford, coarse and brown. Dorsal areas showed greatest pigmentation. A true basement membrane was not apparent. A series of folds extending into and encircling the middle third of the hair follicle was described but no function was determined.—JOYCE E. HAMMANT.

HIX, E. L., UNDERBJERG, G. K. L. & HUGHES, J. S. (1959). **The body fluids of ruminants and their simultaneous determination.**—*Amer. J. vet. Res.* **20**, 184-191. **2245**

Extracellular water (ECW) and total body water (TBW) were determined simultaneously in each of 30 sheep, 9 goats and 5 calves, by estimating the concentration of antipyrine and sodium thiocyanate in the body fluids after i/v inj. of a solution of these reagents. Full details are given. Plasma volume (PW) was estimated using Evans blue dye. In sheared, normally hydrated sheep the ECW (thiocyanate space) was consistent at 30% of the body weight. The TBW (antipyrine space) ranged from 53-59%. Water distribution in goats was similar. Severe dehydration in sheep resulted in 26% reduction in PW and 25% reduction in interstitial and extracellular water. A concept of an anatomical versus a physiological volume of the ECW compartment is discussed.—JOYCE E. HAMMANT.

BLASCHKO, H. & HAWES, R. (1959). **Observations on spermine oxidase of mammalian plasma.**—*J. Physiol.* **145**, 124-131. [Authors' summary modified.] **2246**

Spermine and spermidine were oxidized in the sera of all ruminants examined, camel, llama, giraffe, fallow deer, ox, sheep and goat.

Spermine oxidase activity was not found in the sera of non-ruminants.

The ability to oxidize spermine and benzylamine is either absent or almost absent in the sera of new-born goats; enzymic activity is

gradually acquired during the first months after birth.

It is suggested that spermine oxidase arises in phylogenesis, parallel with the evolution of the rumen, from an amine oxidase without significant action on spermine. [See also V.B. **28**, 3410.]

ZAKS, M. G. (1958). [Physiology of the motor apparatus of the mammary glands of farm animals.] pp. 184. Moscow & Leningrad: Izd. Akad. Nauk S.S.S.R. (12s.) [In Russian.] **2247**

This monograph reviews the literature on the storage function of the mammary glands, the physiology of milk ejection, the excretion of milk fat and other components of milk, relationship between formation and excretion of milk, and the practical application of physiological principles in milking technique. It is valuable in bringing to light Russian work, much of which is probably quite unknown to Western scientists. The bibliography includes 9 papers written by Zaks, 121 of the 222 references are Russian. An English translation of this monograph would make interesting reading.—R.M.

DENAMUR, R. & MARTINET, J. (1959). Les stimulus nerveux mammaires sont-ils nécessaires à l'entretien de la lactation chez la chèvre? [Is nervous stimulation of the mammary glands necessary for the maintenance of lactation in goats?].—*C. R. Acad. Sci. Paris* **248**, 743-746. **2248**

From experiments on 7 goats the authors were able to answer this question in the negative.—R.M.

I & II. OKADA, M. (1958). **Histology of the mammary gland. IV. Comparative morphology of the degenerative lymphoid cells in the mammary tissues, lymphoid organs and gut of mice. V. Effect of ACTH on the lymphoid cell counts in the mammary glands of lactating mice and rats.**—*Tohoku J. agric. Res.* **9**, 1-21 & 23-35. **2249**

I. Nineteen adult female mice were killed at intervals (*i.e.*, non-breeding, immediately post-partum, on the 9th, 26th and 28th day post-partum). Mammary tissue, duodenum, ileum, spleen and thymus were fixed and stained. Degenerative lymphoid cells found in the mammary tissues post-partum and during lactation had swollen cytoplasm and contained large amounts of ribonucleic acid (RNA) and some neutral mucopolysaccharides. They were

typical colostrum bodies. The amounts of mucopolysaccharides increased after weaning. The numbers of degenerative lymphoid cells in the other tissues increased immediately post-partum. These cells were shrunken and contained little or no RNA or polysaccharides.

II. Adult female rats and mice were injected s/c with ACTH during the mid-lactation period. One or two injections on one or two days were given. Lymphoid cell counts were made on blood samples, mammary, lymphoid and gut tissue. Four lactating mice were adrenalectomized before receiving ACTH. Non-breeding animals were used as controls. ACTH caused a decrease in the numbers of circulating lymphoid and eosinophile cells in the intact animals, with an increase in lymphoid cells in the mammary tissue. A similar increase was found in the adrenalectomized mice, but these cells contained no RNA. Only in the intact animals did ACTH increase the lymphoid cell count in the other tissues studied.—JOYCE E. HAMMANT.

PRUSTY, J. N. (1958). **Distribution of the elastic tissue in the mammary gland of a cow.**—*Brit. vet. J.* **114**, 411-413. [Author's summary.] **2250**

Elastic tissue is present only in small amount in the interlobar connective tissue of the mammary gland in heifers of varying ages. Elastic tissue is present in much greater quantity in the interlobar and interlobular connective tissue, but none in the intralobular connective tissue of the lactating gland. Lactiferous ducts of all types possess elastic tissue in their wall except in the virgin. In the non-lactating mammary gland elastic tissue is abundant throughout in the interstitial connective tissue.

SMITH, I. M. (1959). **The blood picture of Ankole Longhorn cows.**—*Brit. vet. J.* **115**, 27-30. [Author's summary modified.] **2251**

A blood sample was taken from each of 30 Ankole Longhorn cows of a herd chosen at random from African-owned herds. Haematological standards based on the mean \pm three standard deviations for Ankole Longhorn cows in the dry season were established tentatively.

RASMUSEN, B. A., STORMONT, C. & SUZUKI, Y. (1958). **Blood groups in sheep.**—*Proc. Xth int. Congr. Genet., Montreal 2*, (Absts.) **227**. **2252**

A brief account of six genetic systems of blood groups, details of which will be published elsewhere.—R.M.

TUCKER, E. M. (1959). **The life span of sheep erythrocytes.**—*J. Physiol.* **145**, No. 2. pp. 36P-37P of Proceedings. **2253**

The potential life span of sheep erythrocytes was 130 days. This figure was derived from experiments with radio-iron and differential haemolysis.—R.M.

WRIGHT, R. D., BRADLEY, T. R., NELSON, J. F. & COGHLAN, J. P. (1958). **Changes in the potassium concentration and metabolism of red blood cells of the lamb.**—*Nature, Lond.* **182**, 1742-1743. **2254**

The authors measured the K and Na content, oxygen uptake and glycolytic activity of r.b.c. obtained from 4 lambs aged between 12 and 60 days. During this period there was a large decrease in K content and an appreciable increase in Na content. Oxygen uptake decreased with increasing age of the lambs. There appeared to be little correlation between K retention and glycolysis.—R.M.

BARAK, A. J. (1958). **Paper electrophoretic studies of some animal haemoglobins.**—*Arch. Biochem.* **75**, 542-543. **2255**

While the electrophoretic pattern of haemoglobin from adult cows was similar to that from man, haemoglobin from calves differed by having a high mobility. Only one type of haemoglobin was present in sheep [no details of number or breed given].—R.M.

ARCHER, R. K. & FLUTE, P. (1959). **Heparin and thromboplastin generation in the horse.**—*Nature, Lond.* **183**, 235-236. **2256**

Intravenous injection, into ponies, of 250 i. u. of heparin/kg. prolonged the clotting time and the one stage plasma prothrombin time for 5 hours, causing a concurrent defect in thromboplastin generation. Addition of alumina adsorbed plasma or normal serum to a specimen 2 hours post-injection increased the thromboplastin formation (serum being the more effective), but complete correction was not achieved. (In similar experiments in the human subject, complete correction was obtained.) It was suggested that horse plasma might not react normally, with accelerated clot formation, in contact with glass.—JOYCE E. HAMMANT.

RITCHIE, H. D., GRINDLAY, J. H. & BOLLMAN, J. L. (1959). **Flow of lymph from the canine liver.**—*Amer. J. Physiol.* **196**, 105-109. **2257**

The anatomy of the hilar lymphatics and the flow of lymph through them were studied in 100 anaesthetized dogs. Two drainage systems were identified: a main hilar system which

mainly drained the right lobe, and an accessory hilar system which mainly drained the left lobe. About 80% of lymph leaving the liver went by the hilar lymphatics, while the remainder left by the venous route.—R.M.

SWANSON, E. W. & HARRIS, J. D., JR. (1958). **Development of rumination in the young calf.**—*J. Dairy Sci.* **41**, 1768-1776. [Authors' summary modified.] **2258**

The activities of 26 calves were observed for a full day's time each 2 weeks from 1-2 to 15-16 wk. of age. Rumination had begun in 18 of the calves in the first 2 wk., in 25 in the second 2 wk., and in all in subsequent periods. Rumination time increased rapidly to nearly 5 hr. per day at 6-8 wk. of age. Thereafter, the rate of increase in rumination time was reduced. Rumination time was positively correlated with dry feed consumption, but less time per lb. of feed was spent ruminating as the calves aged. The rumen contents of 17 calves killed at 12-22 days of age indicated that more than half were ruminating effectively at 2 wk. of age. Observations are also presented of correlations between blood glucose content and rumination time.

BELL, F. R. (1959). **Preference thresholds for taste discrimination in goats.**—*J. agric. Sci.* **52**, 125-128. [Author's summary modified.] **2259**

The technique for assessing rejection and acceptance thresholds for gustatory sense in goats is described.

Quinine dihydrochloride was rejected at 125 mg./100 ml. but was accepted at 12.5 mg./100 ml. Sodium chloride had a rejection threshold of 5.0 g./100 ml. and an acceptance threshold of 1.25 g./100 ml. Acetic acid was rejected at 5 ml./100 ml. but was accepted at 1.25 ml./100 ml. Glucose did not provide data for the assessment of thresholds, since all the goats consumed solutions containing the highest conc. of glucose offered, i.e., 40 g./100 ml.

DAWES, G. S. & MOTT, J. C. (1959). **Reflex respiratory activity in the new-born rabbit.**—*J. Physiol.* **145**, 85-97. [Abst. from authors' summary.] **2260**

A method is described for measuring tidal air in small animals without surgical interference. The authors' observations demonstrated that several respiratory reflexes function effectively in the new-born rabbit. They suggest that failure to maintain hyperpnoea during anoxia is not necessarily related to depression of the respiratory centre.

RIGDON, R. H. (1959). **Mechanism of removal of fluid and particulate material from the respiratory tract of the duck.**—*Arch. Path.* **67**, 215-227. [Author's summary modified.] **2261**

The transfer of fluids and particulate material from the respiratory tract of the duck to the vascular system occurs primarily in the air sacs. The variation in the mechanism of removal of particulate material in the duck and in mammals is no doubt necessitated by the differences in the respiratory and lymphatic systems. There are no lymph nodes in the duck.

WENDELL-SMITH, C. P. & WILLIAMS, P. L. (1958). **Some structural characteristics of myelinated nerve fibres.**—*Nature, Lond.* **182**, 1608-1609. **2262**

Measurements of axonal and external diameter were made on 5 μ sections of fresh rabbit muscle and cutaneous nerve tissue. A linear relationship was found between myelin sheath thickness and axone diameter for both types of nerve, but the ratio of axone diameter to sheath thickness differed. In both types of nerve a similar increase in sheath thickness accompanied an increase in axone diameter. A bimodal histogram illustrated external diameter-size frequency distribution of the medial gastrocnemius nerve although a unimodal form was constructed illustrating the internal diameter-size frequency distribution.—JOYCE E. HAMMANT.

LARSON, L. L. & KITCHELL, R. L. (1958). **Neural mechanisms in sexual behavior. II. Gross neuroanatomical and correlative neurophysiological studies of the external genitalia of the bull and the ram.**—*Amer. J. vet. Res.* **19**, 853-865. **2263**

A detailed anatomical description of the nerve supply to the external genital organs of the bull and ram combined with electrophysiological studies is presented. The central origin of the nerves supplying the external genital organs can be divided into cranial, middle, and caudal parts. The cranial part is composed of C8, T1, and T2 (lateral thoracic nerve) and T9-T13, L1 and L2 (cutaneous rami of ventromedial branches of spinal nerves). The middle portion is made up of L2, L3, and L4 (inguinal nerve), whilst the caudal part is made up of S1-S5 (perineal, middle haemorrhoidal, caudal haemorrhoidal, and anastomosis between the sciatic and deep perineal nerves).

—A. ACKROYD.

AITKEN, R. N. C. (1959). **Observations on the development of the seminal vesicles, prostate**

and bulbourethral glands in the ram.—*J. Anat., Lond.* 93, 43-51. 2264

The seminal vesicle in the late-term foetus was morphologically similar to that of the castrated adult, although the influence of testicular androgens in the former was suggested by greater height of the secretory cells. The prostate and bulbourethral glands were developmentally, morphologically and functionally similar, but there may be slight differences in composition of the secretion in adults. Both prostate and bulbourethral glands were functionally active in embryos between 17 and 20 cm. long, and the gland tubules were morphologically similar to those of the adult at that stage.—R.M.

MAGNANI, G. (1958). Ulteriore contributo allo studio dei rapporti fra ghiandole sessuali maschili e ghiandole corticosurrenali. [*Relationship between the testicles and the adrenal glands.*]—*Arch. Vet. Ital.* 9, 125-131. [Summaries in English, French, German and Spanish.] 2265

In experiments on rats the vitamin C content of the testicles was not affected by adrenalectomy followed by administration of desoxycortisone or cortisone.—T.E.G.R.

KLYNE, W. & WRIGHT, A. A. (1959). Steroids and other lipids of pregnant cow's urine.—*J. Endocrin.* 18, 32-45. [Authors' summary modified.] 2266

Pregnant cow's urine was hydrolysed with acid, and the lipid material obtained was submitted to the fractionation procedures customary in the study of urinary steroids. The results are discussed in relation to the routes of steroid excretion in cows, and in relation to the determination of steroids in animal urines.

ROBBINS, J., WOLFF, J. & RALL, J. E. (1959). Iodoproteins in normal and abnormal human thyroid tissue and in normal sheep thyroid.—*Endocrinology* 64, 37-52. [Authors' abst. modified.] 2267

Two types of iodoproteins other than thyroglobulin have been found in normal and abnormal human thyroid tissue and in normal sheep thyroid. They are similar to, but not identical with, iodoproteins previously described in a functioning rat thyroid tumour, and were detected in tissue labelled with I^{131} either *in vivo* or *in vitro*. Thyroglobulin in human and sheep thyroid tissue differed slightly from rat thyroglobulin in solubility in phosphate buffer and in electrophoretic mobility. A small difference in electrophoretic mobility was also detected between thyroglobulins in the various human tissues.

INGBAR, S. H., ASKONAS, B. A. & WORK, T. S. (1959). Observations concerning the heterogeneity of ovine thyroglobulin.—*Endocrinology* 64, 110-122. [Authors' abst. modified.] 2268

Preparations of thyroglobulin have been made by salting-out from the thyroid gland of a sheep, labelled with I^{131} *in vivo*, from thyroid glands labelled *in vitro*, and from unlabelled glands. Despite electrophoretic and ultracentrifugal homogeneity, such preparations displayed evidence of heterogeneity, as assessed by their behaviour during ion-exchange chromatography, ultra-violet absorption spectra, rate of turnover of I^{131} , and amino-acid content.

MARKOWITZ, H., CARTWRIGHT, G. E. & WINTROBE, M. M. (1959). Studies on copper metabolism. XXVII. The isolation and properties of an erythrocyte cuproprotein (erythrocuprein).—*J. biol. Chem.* 234, 40-45. [Authors' summary modified.] 2269

A procedure is described for the isolation of a cuproprotein (erythrocuprein) from human r.b.c. This protein contains 0.32 to 0.36% copper and is relatively stable at 0° to 37°C. and in the range of pH 4.5 to 8.6. The absorption spectrum of erythrocuprein has maxima at 265 m μ and 655 m μ . Erythrocuprein is the major, if not the only, cuproprotein present in normal mature human r.b.c.

See also abst. 2211 (book, surgery and anatomy).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

HEDRICK, H. B. (1958). Etiology and possible preventive measures in the dark cutter syndrome.—*Vet. Med.* 53, 466-472. 2270

The colour and the pH of beef muscle are closely related and in "dark cutting" beef there is an abnormally high pH and low glycogen content. The condition is more prevalent in

cattle which have been subjected to inclement weather, excitement, trauma or muscular fatigue during the pre-slaughter period. Dark cutting beef is caused if cattle are subjected to such stresses for approximately one day or longer thus depleting the muscle glycogen, but all animals do not react alike to a given stress and

it is only when stress is prolonged that the muscle glycogen is depleted. The condition has been produced experimentally by injection of adrenaline (which mobilizes the blood sugar at the expense of tissue glycogen), and by administration of convulsive doses of insulin.

Cattle held 24 to 48 hours under optimal conditions with food and water following stress of such a degree that would normally produce dark cutting carcasses will make a considerable recovery, but if they have been subjected to intense stress over a prolonged period they may take several days to regain physiological normality. Possible preventive measures are:—A period of rest and adequate feeding prior to slaughter, protection from inclement weather, handling so as to prevent excitement, administration of glucocorticoids to aid in the restoration of glycogen, and the use of tranquillizers.

—H. THORNTON.

EDLUND, H. (1959). Ny lag om köttbesiktning. Kungl. Maj:ts prop. nr 11 år 1959. [New law on meat inspection in Sweden. Statute No. 11, 1959.]—*Medlemsbl. Sverig. VetFörb.* 11, 57. [In Swedish.] 2271

Statutory meat inspection, in force since May 1934, applied to the meat of cattle, sheep, goats, pigs and horses, though because of meat shortage during the second world war further legislation was enacted to cover elk, bear, wild pig and badger. It was compulsory only in districts with a population over 4,000; in smaller communities the service was introduced only after application from local authorities, and demand was less than had been envisaged: in 1946 only 43.6% of the rural districts had introduced compulsion, and in 1957, 76.2%. The

See also absts. 1985 (tubercle bacilli in cows' milk); 2093 (survival of the virus of tick-borne encephalitis in milk and products); 2134 (Q fever); 2310 (book, meat hygiene).

REPRODUCTION AND REPRODUCTIVE DISORDERS

HOPPE, F. G. (1958). Sammenlignende undersøgelse over spermioxiciteten af antibiotica med og uden tilsaetning af gentianviolet anvendt i tilslutning til insemination på kvaeg. [Toxic action on spermatozoa of antibiotics, with and without gentian violet.]—*Nord. VetMed.* 10, 730-740. [In Danish. Summaries in English, French and German.] 2273

While penicillin and streptomycin appeared to have little toxic action on bull spermatozoa even in moderate concentrations, gentian violet was strongly toxic at a conc. as low as 0.5 mg./ml. When small pessaries each containing

new statute (no. 11, 1959), to be in force from the 1st January 1960, makes meat inspection compulsory at all public abattoirs, provision being made by the county government authorities after representations from local authorities. The staff of meat inspection offices need not in future be appointed by the veterinary board but are to be responsible to the county authorities. A new inclusion in meat to be inspected is nutria, possibly because it may harbour trichinella larvae. Reindeer is also to be included, from a date to be fixed later.—F.E.W.

ERSHOV, V. S. (1958). [Higher veterinary education in the Chinese People's Republic.]—*Veterinariya, Moscow* 35, No. 12 pp. 71-73. [In Russian.] 2272

In China there are 11 veterinary faculties attached to the 3 zootechnical-veterinary high schools and to some of the 24 agricultural schools, which since 1952 have been separated from the universities. The main veterinary faculties are at the North-West zootechnical-veterinary institute (Lanchow); the military veterinary institute (Changchun); the Inner-Mongolian zootechnical-veterinary institute; Peking agricultural institute; the North-East agricultural institute (Harbin); the agricultural institute of South China (Canton); and the Szechwan agricultural institute. At three of the schools the course lasted 5 years, while at the remainder it was 4 years. A uniform curriculum was introduced in 1954. There were 3,000 students training as "veterinary specialists". A system of veterinary research institutes was being built up, and a new one was being organized at Lanchow; it was hoped to start a central veterinary research institute within the next few years.—R.M.

60,000 i.u. of benzylpenicillin, 200 mg. dihydrostreptomycin and 20 mg. gentian violet were introduced into the uterus shortly after insemination, only 23% of cows became pregnant, compared with 53% of untreated controls. When gentian violet was omitted, the pessaries did not improve conception rate in cows which persistently failed to conceive.—R.M.

WILCOX, F. H. & SHORB, M. S. (1958). The effect of antibiotics on bacteria in semen and on motility and fertilizing ability of chicken spermatozoa.—*Amer. J. vet. Res.* 19, 945-949. 2274

Chloramphenicol, tetracycline, and oxytetracycline reduced the motility of cock spermatozoa when added to semen at the rate of 450 and 900 units or mg. per ml., but penicillin, streptomycin and oleandomycin did not. The greatest reduction in the normally high bacterial count of plated cock semen samples occurred when they were treated with 450 units of penicillin combined with 450 μ g. of streptomycin or dihydrostreptomycin per ml. or with 90 μ g. of tetracycline or oxytetracycline combined with 90 μ g. of streptomycin or dihydrostreptomycin, but improvement in the fertility of cock semen was most marked when it was diluted with buffer containing oxytetracycline and dihydrostreptomycin.—A. ACKROYD.

ADLER, H. C. (1959). Mikroskopisk undersøgelse af flødefortyndet sæd. [**Microscopic examination of semen diluted with cream.**]—*Medlemsbl. danske Dyrægeforen.* 42, 106-107. [In Danish.] 2275

When cream is used as a diluent for semen, microscopic examination (particularly for motility) presents difficulties, e.g. the fat globules in a drop preparation obscure the spermatozoa. This can be overcome as follows. A drop of the diluted semen is placed on an object-glass and a cover-slip placed over it in such a way that the fluid is dispersed under only one half of the cover-slip. A drop of 3.2% sodium citrate is then placed on the object-glass at the edge of the cover-slip on the side farthest from the sample; the citrate immediately flows in under the cover-slip and fills the remaining space between it and the object-glass. A mixing zone arises between semen and citrate, and this is the field examined.—F.E.W.

WAWRZYŃIAK, M. (1958). **Histophysiologic studies of the influence of ascorbic acid on spermiogenesis in cockerels.**—*Ann. Univ. M. Curie-Skłodowska, Sect. DD.* 1956 11, 1-56. [In English. Summaries in Polish and Russian.] 2276

Ascorbic acid accelerated spermatogenesis when injected i/m into cocks aged 35 days in 28 12-hourly doses each of 50 mg.—R.M.

LAKE, P. E. & McINDOE, W. M. (1959). **The glutamic acid and creatine content of cock seminal plasma.**—*Biochem. J.* 71, 303-306. [Authors' summary modified.] 2277

Free glutamic acid in a concentration of about 1 g./100 ml. was identified chromatographically in the seminal plasma of the cock. Small amounts of alanine, aspartic acid, glycine,

serine and an unidentified ninhydrin-reacting substance were detected, and about 100 mg. of creatine/100 ml. were present. About 80% of the non-protein nitrogen in the seminal plasma is accounted for by glutamic acid plus creatine. It is probable that these substances are mainly of testicular origin and that the glutamic acid plays a major part in maintaining the osmotic pressure and pH.

MILOVANOV, V. K., SYTINA, M. V. & KULESHOVA, V. G. (1959). [**Influence of increased oxygen content of air breathed by male mammals on spermatogenesis, fertility and progeny.**]—*Proc. Lenin Acad. agric. Sci.* 24, No. 2, pp. 32-39. [In Russian.] 2278

3 male rabbits were placed in an oxygenated chamber 2 hours daily for 70 days. Their reproductive performance was compared with 3 control males of the same breed and age. It was claimed that even short exposure to oxygen improved spermatogenesis, and that the treatment resulted in reduced neonatal mortality and increased growth rate of the offspring.—R.M.

DÖCKE, F. (1958). Uteruskontraktionen beim Rind. [**Uterine contractions in the cow.**]—*Zuchthyg. FortpflStörung. u. Besamung* 2, 266-280. 2279

Four normal cows and a spayed one were studied by the technique of balloon insertion, linked to a kymograph. An interval of 45 min. was allowed before readings were taken. Amplitude, frequency and duration of contractions were studied. Amplitude varied widely between individuals and from one cycle to another but was always maximal at heat and minimal at mid-cycle; the total variation is expressed as 8-23 mm. Frequency averaged at heat rather less than the dioestrous figure of one contraction per min. Duration began to increase early in heat, and was maximal shortly after its end. Variation was 45 sec.—2 min.

The first contraction index used was a product of all three factors; in one cow it significantly exceeded that of the others. For 4 cows over 5 cycles, indices were measured in the course of artificial insemination (A.I.) involving stimulation of cervix and clitoris both singly and together; also in the approach, mount and ejaculation phases of natural service. The means were 8.8 for oestrous control, 17-18 for all forms of A.I., 23 for approach and 30 for ejaculation; statistically significant differences. Investigation of the effect of the quantitative blood oestrogen level in the spayed cow showed that, as single doses rose 20-80 mg., there was a quite general

increase in reactivity. 100 mg. produced tetanic spasms, not conducive to transport of spermatozoa.—F. L. M. DAWSON.

GRASSET, J., PIERRE, R., PIGEON, G. & BILWEIS, J. (1958). Contribution à l'étude des courants d'action du muscle utérin. Essai d'interprétation des traces d'électro-hystérogaphie obtenus chez l'animal et chez la femme. [Studies of the "electrical activity" of uterine muscle.]—*Rev. Path. gén.* 58, 765-780. [Summaries in English and Spanish.] Discussion: pp. 780-784. 2280

Electrical activity is recorded on a standard electroencephalograph, from the surface of the uterus at laparotomy in non-pregnant rabbits and pregnant monkeys, and from the abdominal skin in pregnant and parturient women. Details are given of the electrodes and of the nature of the wave formation of the recordings. In animals oxytocic drugs (posterior pituitary extract, ergometrine and methyl ergometrine) intensify and co-ordinate pre-existing weak irregular electrical activity. Conversely oxytocin-induced electrical activity is inhibited by drugs used in clinical obstetrics by the authors as "lytic mixtures" (antihistamines, antispasmodics, curarizing and ganglion blocking agents). Considerable attention is paid to the effect of these agents and of hypnosis in suppressing the electrical pattern of muscle activity during labour in women. This effect is interpreted as creating a desirable isolation of the uterus from nociceptive impulses, without inducing loss of consciousness of the patient. In discussion on the paper the method of recording was criticized.

—R. J. FITZPATRICK.

MCDONALD, M. F. & RAESIDE, J. I. (1958). Cervical mucus arborization. Its use in assessing ovarian activity in the ewe.—*Proc. N. Z. Soc. Anim. Prod.* 18, 87-95. Discussion: pp. 95-96. 2281

Crystallization patterns of vaginal mucus were studied in ewes having normal oestrous cycles, ewes injected with oestradiol benzoate, and pregnant ewes. Fern-like crystals were present near the time of ovulation and absent during the luteal phase: the phenomenon could be used to detect silent heat. Attempts were made to diagnose pregnancy 2-5 weeks after mating in 72 ewes, based on the type of crystallization patterns within 24 hours of injection of oestradiol benzoate. A positive diagnosis (absence of arborization) was correct in 50 cases and incorrect in 18.—R.M.

HUTCHISON, H. G. & MACFARLANE, J. S. (1958). Variation in gestation periods of zebu cattle under ranch conditions.—*E. Afr. agric. J.* 24, 148-152. 2282

182 cows which had been observed day and night during the service period and twice daily subsequently till calving, had a mean gestation period of 282.7 days, varying from 270 to 296 days. Pregnancies terminating Nov.—Dec. averaged 3.5 days longer than those terminating in Sept. (poorer grazing) and bull calves were carried about 2 days longer than heifer calves. Breed variations in gestation period were correlated positively with body weight and height. 7.2% of the cows stood to the bull while up to 60 days pregnant with a mean of 32 days—a circumstance constituting a hazard to accurate pedigrees breeding.—F. L. M. DAWSON.

DEBACKERE, M., VANDERPLASSCHE, M. & PAREDIS, F. (1959). Vergelijkende studie over de resultaten bekomen na sectio caesarea en na foetotomie bij het rund. [Comparison of the results of caesarian section and foetotomy in cows.]—*Vlaamsch diergeneesk. Tijdschr.* 28, 1-34. [In Flemish. Summaries in English, French and German.] 2283

A statistical comparison was made of the immediate and late results of 340 caesarian sections (of which 173 were for oversized foetus) and 80 foetotomy operations. Both groups had about the same overall mortality of cows and subsequent fertility was about the same. In cases of oversize foetus, the mortality of cows was higher after foetotomy than after caesarian section, but retention of the placenta was less common after foetotomy. Histological studies of the uterus after caesarian section were described. A common complication of this operation was adhesion of the uterus to the peritoneum. Bearing in mind that a caesarian operation was about 4 times more expensive than foetotomy, the choice of procedure was sometimes difficult to make.—R.M.

COBB, L. M. (1959). The radiographic outline of the genital system of the bitch.—*Vet. Rec.* 71, 66-68. [Author's summary modified.] 2284

C. described the technique used and provided illustrations of the normal radiographic appearance and of the appearances in certain pathological conditions.

WHITTEN, W. K. (1959). Occurrence of anoestrus in mice caged in groups.—*J. Endo-*

crin. 18, 102-107. [Author's summary modified.] 2285

When female mice were caged in groups of 30, regular oestrous cycles did not occur in the majority of animals. The vaginal smears of these mice were mucified and some remained so for 40 days. Cycles promptly returned when the mice were caged individually.

The ovaries of the grouped mice were significantly lighter than those of individually housed controls, although the body weights were not different. Fewer of the grouped animals had tubal ova and corpora lutea were absent from, or atrophic in, some of the ovaries.

It is concluded that anoestrus occurs when mice are grouped and results from a depression of pituitary gonadotrophic function. This depression is independent of mutual visual or tactile stimuli.

NYMAN, M. A., GEIGER, J. & GOLDZUEHER, J. W. (1959). Biosynthesis of estrogen by the perfused stallion testis.—*J. biol. Chem.* 234, 16-18. 2286

Sodium acetate-1-C¹⁴ was used to study the synthesis and release of testicular oestrogen, by means of an intra-arterial infusion of one testicle *in situ*, and of the other testicle in a perfusion system. Considerable effort was devoted to the development of a technique for the isolation and cannulation of the intact stallion spermatic artery under totally aseptic conditions. The artery develops extreme spasm on chilling or manipulation, and the spasm can be relieved only in part by the local application of lignocaine. This spasm prohibited a satisfactory infusion experiment since only a small amount of blood circulated through the testis in a period of about 1 hour. The perfusion experiment, on the other hand, proceeded satisfactorily and is the subject of this report.

BENNETT, J. P., BOURSNEILL, J. C. & LUTWAK-MANN, C. (1959). The influence of oestrogen administration to rabbits during early pregnancy on the distribution of [³²P]-phosphate in the embryo and its environment. — *J. Endocrin.* 18, No. 1, pp. ii-iii of Proceedings. 2287

Pregnant rabbits received a single dose of diethylstilboestrol (5 mg., s/c.) 36 hours before the isotope experiments in which ³²P was used. Stilboestrol treatment appeared to produce no gross deleterious effects on 6-day blastocysts and did not prevent the implantation process. However, when given to rabbits at a stage when

implantation was already under way (from the 7th day of gestation onwards) it resulted in uneven spacing of implants and a diminished amount of (frequently discoloured) blastocyst fluid. Damage to the placental tissue was especially evident in the foetal placenta, as well as in the 10- and 12-day foetuses.

NOYES, R. W., ADAMS, C. E. & WALTON, A. (1959). The transport of ova in relation to the dosage of oestrogen in ovariectomized rabbits. — *J. Endocrin.* 18, 108-117. 2288

Failure of the mechanisms that normally result in the transport of spermatozoa through the female genital tract may be an important cause of reproductive loss in lab. and farm animals. The present experiments were undertaken to determine the part which the level of oestrogen in the body might play in the transport of ova. In ovariectomized rabbits it was necessary to administer about 1 µg. of oestradiol benzoate daily for 5-10 days in order to restore the capacity of the uterine tract to transport ova normally.—R.M.

DANCE, P., LLOYD, S. & PICKFORD, M. (1959). The effects of stilboestrol on the renal activity of conscious dogs.—*J. Physiol.* 145, 225-240. [Authors' summary modified.] 2289

The effect of stilboestrol on renal function was studied in conscious dogs; in particular, the excretion, during diuresis, of water, Na, K and Cl, and the renal clearances of creatinine and diodone. In normal dogs, and in one ovariectomized animal, stilboestrol reduced the excretion of water and Na during diuresis. This effect lasted for several days, and was marked on the first day after treatment. No consistent alteration in plasma concentration of K was found, but in 2 dogs the Na content was low on the 6th day; the venous haematocrit was steady. Stilboestrol administration was followed by a rise in renal plasma flow which lasted some days, and a smaller rise in glomerular filtration rate. It is concluded that the neurohypophysis is concerned in the response to stilboestrol. It is not clear how far the kidney is directly affected.

ALLOITEAU, J. J. (1958). Activité hormonale du corps jaune au cours de la deuxième moitié de la gestation chez la ratte hypophysectomisée. [Hormonal activity of the corpus luteum during the second half of pregnancy in hypophysectomized rats.] — *C. R. Soc. Biol., Paris* 152, 1343-1346. 2290

During the second half of pregnancy the

corpus luteum secreted an oestrogen which was essential in addition to progesterone for the continuation of pregnancy. This dual activity was independent of the pituitary and was probably under the control of placental prolactin.—R.M.

BÖRNFORS, S., ORSTADIUS, K. & ÅSHEIM, Å. (1959). Antikonceptionell behandling hos hund med oestrogen hormon. [**Contraceptive treatment of dogs with oestrogen.**]—*Medlemsbl. Sverig. VetFörb.* 11, 113-117. [In Swedish.] 2291

Of some 200 bitches given a single treatment with oestrogen (25,000 i.u.) generally 1-5 days after mating, 109 cases were followed up. The treatment was 94.5% successful in that 103 bitches did not become pregnant. Oestrus was prolonged in one-third of the cases. The incidence of pyometra was no higher than normal.

—F.E.W.

CHRISTENSEN, N. O. (1958). Die Pathologie des Hodens und Nebenhodens bei der segmentalen Aplasie des Wolff'schen Ganges beim Bullen. [**Segmental aplasia of the Wolffian duct in bulls: pathology of testicle and epididymis.**]—*Dtsch. tierärztl. Wschr.* 65, 465-466. [Summary in English.] 2292

Previous work by Blom & Christensen on segmental aplasia of the Wolffian duct, an apparently hereditary condition in bulls, is reviewed [*V.B.* 22, 1892; 23, 1405 & 27, 1297]. Pathological and histological details are given of 3 bulls with bilateral, 14 with left-sided and 46 with right-sided aplasia. The condition was present in 7 bull calves sired by an affected bull, in 4 of 19 sons of another, but also in 4 bull calves sired by an apparently normal bull.—E.G.

BOLDIZSÁR, L. (1958). Ammonium chloratum alkalmazása szarvasmarhák meddőségének egyes eseteiben. [**Use of ammonium chlorate in bovine sterility.**]—*Mag. állator. Lapja* 13, 319-320. [In Hungarian. Summaries in English and Russian.] 2293

28 cows and 39 heifers, all showing varying degrees of sexual hypofunction with hypoplasia of the genital organs but no other detectable pathological changes, were treated with doses of 20 g. ammonium chlorate *per os* every 48 hours for 3 weeks. Any environmental change or additional treatment was avoided. 55 animals responded to the treatment with the appearance of oestrus and the improvement of hypoplasia and 45 of these were successfully inseminated.

In some of the remaining 18%, undetected suppurative conditions of the genital organs became manifest as a provocative result of the treatment. The author suggests that field trials on a large scale would be warranted.—A. SEBESTENY.

KIDDY, C. A., STONE, W. H., TYLER, W. J. & CASIDA, L. E. (1959). Immunological studies on fertility and sterility. III. Effect of isoimmunization with blood and semen on fertility in cattle.—*J. Dairy Sci.* 42, 100-109. [Authors' summary modified.] 2294

An attempt was made to determine the importance of antigen-antibody reactions as potential causes of lowered fertility in cattle.

Seventeen heifers exhibited anaphylactic-like reactions after repeated i/v injections of bull semen. Antibodies against bull spermatozoa were not detectable by laboratory tests on their sera. When the heifers were bred to the bull whose semen they had received, eight conceived on first service and three of the remaining nine on the second. Results from first service were not different from those obtained with the same bulls on non-immunized cows. The conception rate on second service was low, but not significantly so.

The hypothesis was then tested that local antibody production is a factor in lowered fertility. Twelve heifers received repeated intra-uterine injections of a bull's blood. Antibodies were not demonstrable in the genital organs throughout the treatment period, but were produced in the sera of six of the heifers—probably in response to antigens which passed into the circulation. When the 12 heifers were bred to the bull used as the blood donor, 8 conceived on first service, and 2 on the second. There was no indication that this treatment had reduced fertility. The results would be considered more critical if it had been possible to demonstrate antibodies in the lumen of the genital organs of the heifers.

MOORE, N. W. & ROWSON, L. E. A. (1958). Freemartins in sheep.—*Nature, Lond.* 182, 1754-1755. 2295

In the course of attempts to induce acquired tolerance in sheep, skin homografts were exchanged between 5 sets of sheep twins of opposite sex. Four of the 5 sets showed normal homograft reactions, with the skin dying in 10 days, whereas the homografts of the remaining pair behaved as autografts. The female

of this pair had abnormal development of the vulva and clitoris [illustrated] and although more than 2 years old had never shown signs of oestrus: this sheep appeared to be a freemartin.
—R.M.

See also *absts.* 2010-2027 (brucellosis); 2042-2044 (vibriosis); 2047 (survival of Br. abortus, L. pomona and V. fetus in semen extender at 20°C.); 2106 (ovine virus abortion); 2182 (effect of low levels of diethylstilboestrol on gestation and lactation in rats); 2195 thyroid metabolism in pregnant ewes); 2211 (prenatal mortality in swine); 2263 (neural mechanism in sexual behaviour); 2264 (development of seminal vesicles, prostate and bulbourethral glands in the ram); 2265 (testicles and adrenals); 2266 (steroids in pregnant cow's urine); 2306 (report, New Zealand).

SCHLUMBERGER, H. G. (1959). **Polyostotic hyperostosis in the female parakeet.**—*Amer. J. Path.* **35**, 1-23. 2296

A detailed account of work previously published in brief [*V. B.* **28**, 3451].—R.M.

ZOOTECHNY

ANON. (1958). **Report of a symposium on the organization and administration of an animal division held at Royal Society of Medicine, London on 5th May, 1958.** Laboratory Animals Centre Collected papers. Vol. 7. pp. 107. Carshalton: Laboratory Animals Centre M.R.C. Laboratories 10s. 2297

These proceedings comprise ten papers giving views and experience on the maintenance of a colony of lab. animals, with emphasis on administrative and, economic aspects. Contributors came from the United Kingdom, the U.S.A., the Netherlands and France.—R.M.

WEISS, C. (1958). **Care of guinea pigs used in clinical and research laboratories.**—*Amer. J. clin. Path.* **29**, 49-53. [Summary in Interlingua.] 2298

The g.pig, it is stated, is one of the most

delicate of lab. animals. This article deals with the care of g.pigs from the aspects of quarters, cages and litter, diet and source of supply of animals. The main bacterial, protozoan and virus diseases and parasites of g.pigs are enumerated. Attention is drawn to the need for intelligent, trained personnel for the successful management and care of lab. animals.

—T.E.G.R.

SHORT, D. J. & LAMOTTE, J. (1958). **The establishment of an experimental cat colony.**—*J. Anim. Tech. Ass.* **9**, 3-6. 2299

A brief account of housing, feeding, reproduction and disease control. Data are given for the reproductive performance of the authors' cat colony. Chlortetracycline (45 mg./kg. body wt. on the first day followed by half this dose daily) was given by mouth in capsules for the treatment of feline pneumonitis.—R.M.

TECHNIQUE AND APPARATUS

I. MCDADE, J. J. & WEAVER, R. H. (1959). **Rapid methods for the detection of gelatin hydrolysis.**—*J. Bact.* **77**, 60-64. [Authors' summary modified.] 2300

II. MCDADE, J. J. & WEAVER, R. H. (1959). **Rapid methods for the detection of carbohydrate fermentation.**—*Ibid.* 65-69. [Abst. from authors' summary.] 2301

I. A ninhydrin method, four procedures in which a gelatin-precipitating agent is used, and three modifications of Kohn's method, were investigated for the rapid determination of gelatin hydrolysis. A plate modification of Frazier's method, in which the cultures are spot-inoculated on a nutrient gelatin-agar medium and the plate is developed after incubation with an acid mercuric chloride solution, has given the most rapid results, showing gelatin hydrolysis after one hour with rapid liquefiers and after 24 to 74 hours with slow liquefiers that require up to 9 weeks with the routine stab culture method. A tube method using an ammonium sulphate-sodium chloride medium gave results almost as

rapidly. Both methods gave accurate results.

II. A comparative study of a number of rapid methods for detecting carbohydrate fermentation by members of the Enterobacteriaceae and other easily cultivable species of bacteria, led to the selection of a modification of the method developed by Hannan & Weaver (1948) as the most reliable.

TROWELL, O. A. (1959). **The culture of mature organs in a synthetic medium.**—*Exp. Cell Res.* **16**, 118-147. [Author's summary modified.] 2302

A culture method is described by which mature organs, or parts thereof, from rats and mice may be maintained *in vitro* in a simple synthetic medium for short-term experiments. The following organs could be kept for 6-9 days: ureter, ductus deferens, uterus, trachea, arteries, salivary glands, mammary gland, prostate, seminal vesicle, lung, thyroid, parathyroid, pituitary, pineal, ovary, skin, white adipose tissue, lymph nodes, sympathetic ganglia. Partial

survival was obtained in the case of kidney, adrenal and spinal ganglion. The survival of brain, liver, thymus, spleen, bone marrow, testis and pancreas was unsatisfactory.

STRUMIA, M. M., COLWELL, L. S. & DUGAN, A. (1959). The preservation of blood for transfusion. III. Mechanism of action of containers

on red blood cells.—*J. Lab. clin. Med.* **53**, 106-116. [Authors' conclusion modified.] **2303**

The variable toxic effects noted on blood stored in glass and plastic containers is attributed to substances leached from the material of which the containers are made, whether glass or plastic.

See also abst. 2142 (vital staining of blood parasites).

REPORTS

I. CANADA. (1957). Province of Saskatchewan. Sixth annual report of the Animal Industry Branch, being an extract from the annual report of the Department of Agriculture of Saskatchewan, for the twelve months ended March 31, 1957. [BROCKELBANK, E. E.] pp. 68. Regina, Saskatchewan: Lawrence Amon. **2304**

II. CANADA. (1958). Province of Saskatchewan. Seventh annual report of the Director of the Animal Industry Branch, being an extract from the annual report of the Department of Agriculture of Saskatchewan, for the twelve months ended March 31, 1958. [BROCKELBANK, E. E.] pp. 59. Regina, Saskatchewan: Lawrence Amon. **2305**

I & II. The system of Veterinary Service Districts, created in 1945, has been extended. Under this system a group of municipalities may join to appoint a veterinary surgeon and pay him a subsidy of between \$2,000 and \$2,800 a year, half of which is provided by the Department of Agriculture. The veterinary surgeon appointed is not employed by the state, but is required to charge standard fees and does not charge for mileage. During the year 1957/58, 8 more veterinary surgeons were appointed, bringing the total to 28.

A scheme for the control of BOVINE BRUCELLOSIS continued. Blood tests on 100,177 cattle in 1956/57 revealed 6.2% of reactors; this was a higher figure than recorded during the previous 8 years (average 3.7%), but there was an improvement in 1957/58, when 4.96% of 87,000 cattle reacted. Strain 19 vaccine was inoculated into 76,000 calves in 1956/57 and 123,000 calves in 1957/58.

TUBERCULIN TESTING was progressing satisfactorily and in 1957/58 there were 178 accredited municipalities, compared with 54 in 1951.

In HORSES the commonest infectious diseases were encephalomyelitis (17-20 cases a year), infectious anaemia (17-18 cases a year) and influenza.

MUCOSAL DISEASE was reported in cattle in Saskatchewan in 1956/57, but not in 1957/58. Keratitis ("pinkeye") was common in cattle in both years.—R.M.

NEW ZEALAND. (1958). New Zealand Dairy Board. Thirty-Fourth annual report and statement of accounts year ended 31st July, 1958. pp. 126. Wellington: The Board. **2306**

Total dairy stock in New Zealand in January 1957 numbered 2,948,000 of which nearly 2 million were lactating cows. There has been little change in the cattle population since 1952. Average milk yield in the year 1957-58 was 5,960 lb. a cow. Total milk production for New Zealand was 1,154 million gallons, of which 88.7% was used in the manufacture of dairy produce. Statistics for the export of dairy produce are given. A table (table 39) shows the number of cows in 21 countries of the world, and the milk production of and consumption of these countries is compared.

This report also contains a section on the PIG INDUSTRY. The pig population in 1957 was 596,512 (compared with 714,000 in 1940). Figures are given for the reproductive performance of sows: the average litter size was 10.5 and an average of 15.5% of litters was lost through various causes.

In 1957 ARTIFICIAL INSEMINATION was performed in 249,000 cows (12.5% of all cows) and the averaged conception rate was 59.1%. Milk diluent was compared with egg yolk-citrate diluent in 2,700 inseminations: the latter gave slightly better results. The frequency of deformities among 70,000 calves born to inseminated cows was tabulated, and none was common enough to cause concern.

A MASTITIS SURVEY was made during 1957-58 with special reference to treatment with penicillin and other antibiotics. Compared with the surveys of 1943-44 and 1947-48, the incidence has remained about the same, despite

the wide use of antibiotics, but the numbers of cows culled because of severe udder damage have fallen greatly, and a much higher proportion of mastitis cases were mild.—R.M.

NETHERLANDS. (1959). 12e jaarverslag van de "Stichting Provinciale Gezondheidsdienst voor Dieren in Drenthe". 1 Mei 1957-30 April 1958. [12th annual report, Health Service for Animals in Drenthe Province.] [THIJN, J. W.] pp. 86. Assen: Van Gorcum. 2307

Tuberculin tests on 109,984 cattle revealed only 21 reactors (0.02%) in 8 herds, bringing the proportion of TB.-free herds to 99.85% compared with 99.72% the previous year [see *V.B.* 29, 600]. Further progress was made in the control of BOVINE BRUCELLOSIS and only 5.5% of herds were infected, while 85.5% were certified free from brucellosis. Following advice that calves in brucella-free herds should no longer be vaccinated, the number vaccinated fell by 13 thousand to 25,000. A quarterly levy of 2.5 florins per animal has been imposed on owners

of herds not yet free from bovine brucellosis.
—R.M.

DENMARK. (1958). Årsberetning fra Veterinær-direktoratet for året 1957. [Denmark: Annual report of the Director of Veterinary Services for 1957.] [BOHN, H.] pp. 59. Copenhagen: J. H. Schultz A/S. [In Danish. Summary in French.] 2308

There was little change in the disease situation as reported in 1956 [*V.B.* 29, 599], except that there was a greater number of outbreaks of FOOT AND MOUTH DISEASE (45) and 715,000 cattle were vaccinated prophylactically. Bulls at 69 A.I. centres were examined for VIBRIOSIS and infection was confirmed in 33 of them (5% of all insemination bulls). At the end of 1957 there were 1,662 veterinary surgeons in Denmark: 892 were engaged in private practice, 575 in meat inspection, 266 in milk inspection, 362 in artificial insemination, 43 in the state veterinary service, 21 in the state veterinary serum laboratory, and 76 in the Veterinary College.
—R.M.

BOOK REVIEWS

WELCH, H. & MARTI-IBÁÑEZ, F. [Edited by.] (1959). *Antibiotics annual 1958-1959*. pp. xvii+1107. New York: Medical Encyclopedia, Inc. \$12.00. 2309

This valuable annual covers every class of antibiotic agent and contains 184 original papers, a considerable increase over last year's volume, although the price remains the same. Papers of direct veterinary interest which will be abstracted individually in the *Veterinary Bulletin* are as follows:—visual detection of antibiotics in milk by means of a dye (K. M. Shahani); low-level long-term feeding of chlortetracycline and the emergence of antibiotic-resistant enteric bacteria (H. S. Goldberg *et al.*); incidence of *Candida albicans* in poultry and evaluation of experimental moniliasis (H. Yacowitz *et al.*); growth-promoting effect of antibiotics in chicks on a purified diet (E. L. R. Stokstad & T. H. Jukes); studies on chickens mono-contaminated with *Cl. perfringens* or *Str. faecalis* and fed penicillin (M. Wagner & B. S. Wostmann); distribution of reticulo-endothelial elements in the intestinal mucosa and submucosa of germ-free, mono-contaminated and conventional chickens fed penicillin (H. A. Gordon & E. Bruckner-Kardoss); reversal of inhibition by calcium intestinal adsorption of oxytetracycline in fowls (K. E. Price *et al.*); influence of sub-maximal antibiotic

levels on the growth of chlortetracycline-resistant bacteria (G. E. Gale & R. H. Hall); palatability of broad-spectrum antibiotics for swine (J. H. Hare *et al.*).

Antibiotics which attracted the greatest attention in human medicine were spiramycin, kanamycin, penicillin V, triacetyloleandomycin, a combination of tetracycline and oleandomycin, leucomycin, erythromycin and ristocetin. Sulphonamides are not forgotten and there are 3 papers on a new long-acting compound, sulphadimethoxine. Two preparations active against neoplasms are described in detail: streptovitacin from *Streptomyces griseus* and actinobolin from a streptomycete. Several papers deal with antibiotic sensitivity tests. Two new compounds active against *Staph. aureus* are furmethonal (a nitrofurane) and phenacridine chloride. Other papers of special interest are: insoluble oxytetracycline in the treatment of human brucellosis (R. G. Lus); studies of synergists for antimicrobial agents (G. H. Scherr & R. M. Bechtle); factors affecting the loss of antibiotic activity in milk (J. H. Martin & W. J. Harper); suppression of fungal microflora in the conservation of meat with chlortetracycline (M. Herold *et al.*); chlortetracycline therapy of psittacosis in parrots (M. Pollard).—R.M.

MILLER, A. R. (1958). **Meat hygiene**. pp. 557. Philadelphia: Lea & Febiger. 2nd edit. \$8.50. **2310**

"Those who expect to engage in the field of meat hygiene control have the responsibility of learning thoroughly all the principles involved so as to be able to apply them effectively". This statement appeared in the preface to the first edition of Miller's textbook, the text being addressed primarily to veterinary students and veterinarians because, as a group, "they are prepared by their education and training to perform two basic services in meat hygiene, namely, ante-mortem examination of food animals and post-mortem examination of their carcasses". The unquestioned authority of the author made the first edition of this book an important work of reference, and the second edition, which comprises 557 pages and 130 illustrations, diagrams and tables, has been further improved by the addition of chapters on food poisoning, chemical additives and ionizing radiation. The information on poultry inspection has been enlarged considerably and gives a more balanced treatment.

The chapter dealing with sanitation in plant operation could scarcely be bettered, and includes information on water supplies and the washing of abattoir equipment. The observation is made that stainless steel is a most satisfactory material with which to construct equipment for the handling and processing of meat and its products. The advantage of utilizing reinforced concrete compared with iron-work in the construc-

tion of abattoir buildings might, however, have been stressed as the painting of exposed metal structures in lairages and slaughter halls is an expense which constantly recurs. Some illuminating information is given on the value of meat tenderizers and it is shown that the incorporation of papain into meat to be tenderized is of great importance, but that after application of the enzyme to raw meat there is no advantage in holding the meat for one to five hours before cooking. There are some minor points of criticism; the outmoded term 'lymph glands' is still used, while Chapter IV, dealing with pathology, might well be enlarged and more informative, and this chapter could also be improved by clearer and more typical illustrations.—

—H. THORNTON.

EL'TSOV, S. G. [Edited by.] (1958). [**Operative surgery and topographical anatomy of domestic animals.**] pp. 375. Moscow: Gosud izd. sel'skokhoz. literatury. Price: 11r. 10k. (15s.) [In Russian.] **2311**

The first part (pp. 11–120) of this students' text-book is a conventional account of restraint, anaesthesia and surgical technique. The second part is concerned with regional surgery and there are numerous diagrams and 8 coloured plates of topographical anatomy. Chapter 16 (by M. D. Kharchenko) describes lumbar procaine blockade, and blockade of the splanchnic and vagus nerves, which appear to be in current use in the U.S.S.R.—R.M.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

AINSWORTH, G. C. & AUSTWICK, P. K. C. (1959). **Fungal diseases of animals**. pp. xii+148. Farnham Royal: Commonwealth Agricultural Bureaux. [Review Series No. 6 of the Commonwealth Bureau of Animal Health.] 20s.

GASSNER, F. X., JENSEN, R. & HILL, H. J. (Edited by) (1958). **Reproduction and infertility**. 3rd symposium, Colorado State University, Fort Collins, Colorado. [Sponsored by the College of Veterinary Medicine and

the Agricultural Experiment Station.] pp. vi+273. London (New York, Paris & Los Angeles): Pergamon Press. 42s.

HAMMOND, J. (1959). **Progress in the physiology of farm animals**. Supplement. pp. 1047–1116. London: Butterworths Scientific Publications.

VEALL, N. & VETTER, H. (1958). **Radioisotope techniques in clinical research and diagnosis**. pp. xii+417. London: Butterworth & Co. (Publishers) Ltd. 50s.

INDEX TO AUTHORS

- Abdussalam, M., 2067, 2151.
 Adams, C. E., 2238.
 Adler, H. C., 2275.
 Ainsworth, G. C., page 410.
 Aitken, R. N. C., 2264.
 Aleksandrov, N. A., 2005.
 Allain, D. S., 2154.
 Allen, R. W., 2168.
 Alloiteau, J. J., 2290.
 Almejew, C. S., 1994.
 Ambrosioni, P., 2040.
 Ammann, K., 2242.
 Andersen, A. C., 2214.
 Anderson, R. A., 2211.
 Anderson, W. A., 2171.
 Andrei, M., 2025.
 Andrews, E. D., 2186, 2187.
 Anna, E., 1993.
 Annison, E. F., 2195.
 Anthony, D. W., 2076.
 Archer, R. K., 2256.
 Armour, J., 2065.
 Asheim, A., 2291.
 Askonas, B. A., 2268.
 Asso, J., 2079.
 Au, B. H., 1995.
 Austwick, P. K. C., 2055, page 410.
 Awad, N. A., 2021.
 Babini, A., 2077.
 Bajusz, E., 2232.
 Baker, A. H., 2234.
 Baker, E. D., 2211.
 Baker, N. E., 2169.
 Ball, M. G., 2033.
 Ball, S. J., 2068.
 Barak, A. J., 2255.
 Barbareschi, G., 2203.
 Barnum, D. A., 1981.
 Barros, W. M., 2030.
 Bartha, A., 2095, 2096.
 Barton, R. A., 2196.
 Bekker, P. M., 2232.
 van Bekkum, J. G., 2078.
 Belák, M., 2026.
 Bell, F. R., 2259.
 Belobrad, G., 2114.
 Benelli, S., 2022.
 Bennett, J. P., 2287.
 Bentzon, M. W., 1988, 1989.
 Benzie, D., 2178.
 Berecký, I., 2163, 2164.
 Beveridge, J. M. R., 2192.
 Bilweis, J., 2280.
 Birkeland, J. M., 2118.
 Birks, F. T., 2229.
 Bisbini, P., 2040.
 Blaschko, H., 2246.
 Blašković, D., 2090.
 Bleiker, M. A., 1989.
 Bloom, A. J., 2069.
 Börnfors, S., 2291.
 Bogdan, J., 2026, 2099, 2110.
 Bogoch, S., 2069.
 Böhl, E. H., 2118.
 Bohn, H., 2308.
 Bohosiewicz, M., 2224.
 Boldizsár, L., 2293.
 Bolin, V. S., 2056.
 Bollman, J. L., 2257.
 Boocock, D., 2146.
 van den Born, J. M., 2208.
 Boursnell, J. C., 2287.
 Boyne, A. W., 2178.
 Bradley, T. R., 2254.
 Branker, W. M., 2020.
 Brandley, C. A., 2043.
 Brass, W., 2174.
 Breev, K. A., 2144.
 Brefia, M. T., 2072.
 Breza, M., 2114.
 Brocklebank, E. E., 2304, 2305.
 Brodey, R. S., 2173.
 Brown, R. D., 2097.
 Browning, C. B., 2182.
 Bugeac, T., 2206.
 Burrows, R. B., 2160.
 Bustad, L. K., 2216.
 Butler, L. O., 1979.
 Bychenko, B. D., 2036.
 Bystričny, V., 2089.
 Calhoun, M. L., 2244.
 Campano Lopez, A., 2104.
 Carnaghan, R. B. A., 2126.
 Cartwright, G. E., 2269.
 Cartwright, S. F., 2081.
 Casida, L. E., 2294.
 Ceccaldi, J., 2084.
 Chadwick, C. S., 2139.
 Chaikoff, I. L., 2197.
 Chaudler, R. L., 2105.
 Chandrasekharan, K. P., 2125.
 Chavarria, C., 2072.
 Chodkowski, A., 1990.
 Chodnik, K. S., 2167.
 Christensen, N. O., 2292.
 Christie, G. J., 2225.
 Clifford, D. H., 2240.
 Cobb, L. M., 2284.
 Coghlan, J. P., 2254.
 Cohen, H. K., 2063.
 Cojocar, V., 2223.
 Collák, D., 2059.
 Colwell, L. S., 2303.
 Couch, J. R., 2227.
 Cowan, S. T., 2053.
 Crook, R., 2121.
 Culbertson, C. G., 2063.
 Culik, R., 2194.
 Dalgarno, A. C., 2178.
 Dance, P., 2289.
 Dane, D. S., 2130.
 Dang, H. C., 2189.
 Davidson, I., 1982.
 Davis, D. E., 2128.
 Davis, O. S., 2177.
 Davis, R. E., 2181.
 Dawes, G. S., 2260.
 Debackere, M., 2283.
 Deem, A. W., 2184.
 Denamur, R., 2248.
 Desmoulins, J., 2079.
 Dhennin, L., 2079.
 Dhennin, Lo., 2079.
 Dick, G. W. A., 2130.
 Dick, P., 2079.
 Dickson, W. M., 2198.
 Dobek, M., 2058.
 Döcke, F., 2279.
 Donaldson, P., 2128.
 Donaldson, S. N., 2130.
 Douglas, J. R., 2169.
 Doyle, T. M., 1992.
 Drăghici, D., 2025, 2131, 2206.
 Drummond, R. O., 2145.
 Dubedout, C., 1983.
 Duckworth, J., 2178.
 Dugan, A., 2303.
 Dumbell, K. R., 2103.
 Durand, D., 2124.
 Dutt, B., 2191.
 Edlund, H., 2271.
 Eisenstark, A., 2124.
 El'tsov, S. G., 2311.
 Emmons, P., 2148.
 Ernster, L., 2052.
 Ershov, V. S., 2272.
 Fang Hsiao-wen, 2060, 2061.
 Faure, M., 2106.
 Fehér, D., 2096.
 Feigenbaum, A. S., 2183.
 De Felip, G., 2022.
 Ferencik, M., 2023, 2024.
 Ferguson, L. C., 2050.
 Ferguson, T. M., 2227.
 Ferreira-Neto, J. M., 2213.
 Findlay, R. J., 2187.
 Finelle, P., 2133.
 Fisher, H., 2183.
 Flute, P., 2256.
 Flynn, R. J., 2149.
 Fontaine, M., 2117.
 Fontaine, M. (Mme.), 2117.
 Foršek, M. Z., 2108.
 Fountaine, F. C., 2182.
 Fraño, J., 2089, 2092.
 Fried, K., 2200.
 Gale, C., 2062.
 Galley, A. H., 2241.
 Gassner, F. X., page 410.
 Gdovin, T., 2091.
 Gear, J., 2064.
 Geiger, J., 2286.
 Gemmell, M. A., 2152.
 Gerhardt, M. R., 2033.
 Geweniger, H., 2018.
 Gitter, M., 2055.
 Glömmé, J., 2233.
 Gmitter, J., 2134.
 Goldberg, A., 2158.
 Goldsberry, S., 2244.
 Goldzueber, J. W., 2286.
 Gorham, J. R., 2121.
 Górská, Z., 2207.
 Grasset, J., 2280.
 Grešková, M., 2093.
 Griep, W. A., 1989.
 Grindlay, J. H., 2257.
 Grosskopf, J. F. W., 2132.
 Guida, V. O., 2030.
 Guild, J., 1989.
 Gustafson, D. P., 2177.
 Gutierrez, J., 2181.
 Hajdu, S., 2012.
 Halliday, R., 2136.
 Hamdy, A. H., 2048, 2049, 2050, 2062.
 Hammond, J., page 410.
 Hancock, B. B., 2118.
 Hara, T., 2120.
 Harris, J. D., Jr., 2258.
 Harris, S. T., 2045.
 Hart, L. I., 2186.
 Hartwig, Q. L., 2218.
 Hasegawa, S., 2035.
 Hawes, R., 2246.
 Hazelwood, R. L., 2236.
 Head, M. J., 2180.
 Hecke, F., 2113.
 Hedrick, H. B., 2270.
 Held, R., 2000.
 Helgebostad, A., 2179.
 Helmy, N., 2039.
 Herbert, C. N., 1992.
 Herlich, H., 2159.
 Hesterman, E. R., 2141.
 Heuner, F., 2013.
 Hickey, F., 2190.
 Hill, H. J., page 410.
 Hill, R., 2178.
 Hix, E. L., 2245.
 Hoffman, G., 2112.
 Hogue, D. E., 2188.
 Holnicka, B., 2150.
 Hoppe, F. G., 2273.
 Hopper, P. K., 2119.
 Horton-Smith, C., 2070.
 Hoyt, H. H., 2198.
 Howard, J. G., 2008.
 Hudka, F., 2200.
 Hu, T. P., 1995.
 Hughes, J. S., 2245.
 Huppert, M., 2057.
 Hutchison, H. G., 2282.
 Huygelen, C., 2087.
 Hyldgaard-Jensen, C., 2100.
 Imal, N., 2035.
 Ingbar, S. H., 2268.
 Isaacs, C. E., 2187.
 Ivanova, V. I., 2016.
 Jackson, J. J., 2228.
 Janku, I., 2238.
 Jelfnek, V., 2054.
 Jensen, R., page 410.
 Juskiewicz, T., 2243.
 Kamimura, T., 2035.
 Kanicki, M., 1999.
 Kaszubkiewicz, C., 2207.
 Kawamura, Y., 2107.
 Keeney, E. L., 2057.
 Kehar, N. D., 2191.
 Kelly, E. M., 2219.
 Kelly, K. L., 2069.
 Kiddy, C. A., 2294.
 Kienitz, M., 1980.
 Killejian, A., 2153.
 Kirton, A. H., 2196.
 Kishi, S., 2098.
 Kitchell, R. L., 2263.
 Kiuchi, J., 2098.
 Kjellén, L. E., 2083.
 Klyne, W., 2266.
 Kočič, J., 2026.
 Kötsche, W., 2080.
 Kóna, E., 2201.
 Koppel, Z., 2069.
 Kornilova, A. L., 2170.
 Korobkova, N. G., 2170.
 Kotz, J., 2175, 2207.
 Kowalczyk, T., 2211.
 Kozłowski, F., 1990.
 Krčmář, V., 2023, 2024.
 Krisnan, R., 2125.
 Krishnaswami, A. K., 2166.
 Kulesnova, V. G., 2278.
 Kung, C. D., 1995.
 Kuprowski, M., 2207.
 Kurek, C., 1999.
 Kutěša, I., 2014.
 Lake, P. E., 2277.
 Lamotte, J., 2299.
 Landau, M., 2046.
 Langham, R. F., 2031.
 Larson, L. L., 2263.
 Leclerc, J., 2082.
 Lee, R. P., 2065.
 Lettingwell, T. P., 2218.
 Len'kov, V. I., 2036.
 Lennette, E. H., 2073.
 Leone, G., 2209.
 Lerman, L. H., 2241.
 Lesslie, I. W., 1987.
 Levine, A. S., 2089.
 Lewis, D., 2195.
 Lindahl, I. L., 2181.
 Lindahl, P. E., 2138.
 Lindberg, O., 2052.
 Linggen, C., 2052.
 Lipanowicz, J., 2028.
 Lipinski, S., 1990.
 Liu Kuang-peng, 2060, 2061.
 Lloyd, H. E. D., 2221.
 Lloyd, S., 2289.
 Loida, Z., 2238.
 Long, P. L., 2070.
 Longhurst, W. M., 2169.
 Lord, G. H., 2172.
 Lucas, J. M. S., 2230.
 Luckner, J. T., 2158.
 Lutwak-Mann, C., 2287.
 Lynch, P., 2089.
 Maag, D. D., 2184.
 McDade, J. J., 2300, 2301.
 McDonald, M. F., 2281.
 McEntegart, M. G., 2139.
 MacFarlane, J. S., 2282.
 McGrath, J. T., 2173.
 McGuire, W. C., 2071.
 Mačička, O., 2091.
 McIndoe, W. M., 2277.
 Mackinnon, J. E., 2056.
 McLennan, H., 2148.
 MacNamara, L. G., 2103.
 McNutt, S. H., 2042, 2121.
 Madej, Z., 2207.
 Magnani, G., 2265.
 Magnusson, M., 1988, 1989.
 Maguire, L. C., 2007.
 Malboroda, A. A., 2017.
 Majumdar, B. N., 2191.
 Mangold, R., 2103.
 Manninger, R., 2116.
 Maqsood, M., 2202.
 Markowitz, H., 2269.
 Marti-Ibañez, F., 2309.
 Martin, A. J. P., 2229.
 Martinet, J., 2248.
 Martini, I., 2204.
 Martinsons, E., 2179.
 Masu, S., 2107.
 Matsumoto, Y., 2035.
 Matsuoka, T., 2087.
 Matsuzawa, H., 2098.
 Mayhew, R. L., 2157.
 Mayr, A., 2115.
 Melville, G. S., 2218.
 Mesáros, E., 2054.
 Mészáros, J., 2116.
 Meyn, A., 1986.
 Michalski, Z., 2207.
 Michna, S. W., 2032.
 Miedzobrodzki, K., 2150.
 Mihail, G., 2223.
 Miller, A. R., 2310.
 Miller, G. C., 2157.
 Milovanov, V. K., 2278.
 Minner, J. R., 2063.
 Miyamoto, T., 2098.
 Moguel, M., 2072.
 Mohan, V. S., 2227.
 Moldoveanu, P., 2025.
 Molnár, I., 2161.
 Moore, N. W., 2295.
 Moraillon, P., 2231.
 Morehouse, N. F., 2071.
 Morera, P., 2203.

Author Index

- Morgan, W. J. B., 2044.
Morse, E. V., 2031.
Mortelmans, J., 2037.
Morter, R. L., 2031.
Mott, J. C., 2200.
Mushett, C. W., 2069.
Mykityowycz, R., 2141.
- Nairn, R. C., 2139.
Nakajima, T., 2107.
Nakamura, J., 2098.
Nasr, S. E., 2041.
Neimann-Sorensen, A., 2140.
Nelson, J. F., 2254.
Newbould, F. H. S., 1981.
Newhall, J. H., 2003.
Nishimura, M., 2035.
Nitzschke, E., 1997.
Niznansky, F., 2023, 2024.
Noonan, T. R., 2220.
Norman, L., 2154.
Noyes, R. W., 2288.
Nyman, M. A., 2286.
- Okada, M., 2249.
Oláh, P., 2122.
Olsen, O. W., 2155.
Orság, A., 2059.
Orstadius, K., 2291.
Ortiz, F., 2203.
Ottoen, H. E., 2101.
Oyrzanowska, J., 1998.
- Palotay, J. L., 2003.
Palyusik, M., 2096.
Pankowa, J., 2150.
Paraf, A., 2079.
Paredis, F., 2283.
Parkinson, J. E., 2217.
Parrish, D. B., 2182.
Paterson, A. B., 1991, 1992.
Patterson, D. S. P., 1991.
Pauer, T., 2026.
Pehl, K.-H., 2111.
Peters, B. A., 2229.
Philip, J. R., 2225, 2228.
Pickford, M., 2289.
Piening, C., 1984.
Pierre, R., 2280.
Pigeon, G., 2280.
Placid, L., 2237.
Podgurniak, Z., 2215.
Pope, E. P., 2011.
Potel, K., 2085.
Potter, B. J., 2239.
Potter, G. D., 2197.
Poulsen, E., 2226.
Pounden, W. D., 2048, 2050.
Preuner, R., 1980.
Prusty, J. N., 2250.
Raeside, J. I., 2281.
- Raghaven, N. G. S., 2166.
Rall, J. E., 2267.
Rasmussen, B. A., 2252.
Rauf, A., 2067.
Rawal, B. D., 2075.
Reynolds, H., 2173.
Rhoades, H. E., 2047.
Rice, C. E., 1993.
Richey, D. J., 2076.
Richter, W., 1996.
Rigdon, R. H., 2227, 2261.
Ristic, M., 2043.
Ritchie, H. D., 2257.
Robbins, J., 2267.
Robinson, H. A., 2155.
De Roever-Bonnet, H., 2074.
Roger, A., 2106.
Roger, F., 2106.
Rosen, F. S., 2046.
Rosenberg, H. R., 2194.
Rosenkrantz, H., 2193.
Rowson, L. E. A., 2295.
Roth, L. M., 2143.
Rothstein, N., 2142.
Ruedy, D. D., 2011.
Russell, L. B., 2219.
Russell, W. L., 2219.
- Sadum, E. H., 2154.
Salazar Ramirez, B., 2001.
Samson, K. S., 2168.
Sanchez, Botija, C., 2104.
Sanchez Franco, A., 2109.
Sarwar, M. M., 2151.
Sauer, F., 2198.
Savel'ev, D. V., 2144.
Sanger, V. L., 2049, 2062.
Schad, G. A., 2168.
Schanzel, H., 2162.
Schinazi, L. A., 2153.
Schlesinger, R. W., 2083.
Schliesser, T., 1985.
Schlumberger, H. G., 2296.
Schmitt, J., 2212.
Schoolman, H. M., 2176.
Schoop, G., 2212.
Schultze, A. B., 2205.
Schulz, L. C., 2174.
Schwabe, C. W., 2153.
Schwartz, S. O., 2176.
Schwöbel, W., 2094.
Seigneur, L. J., 2216.
Suzuki, Y., 2252.
Serbanescu, C., 2131.
Shat'ko, P. D., 2170.
Shear, M. J., 2046.
Shehata, H., 2127.
Shone, D. K., 2225, 2258.
Shope, R. E., 2103.
Shorb, M. S., 2274.
Short, D. J., 2299.
- Sikov, M. R., 2220.
Simesen, M. G., 2100.
Simon, J., 2042, 2211.
Singh, D., 2166.
Skarnes, R. C., 2046.
Skoda, R., 2090.
Slavin, G., 1982.
Smith, G. R., 2006.
Smith, H. Williams, 2038.
Smith, I. M., 2251.
Smith, J. W., 2063.
Smith, L. D., 2037.
Sneath, P. H. A., 2053.
Soave, O. A., 2073.
Sobek, V., 2238.
Sokol, A., 2137.
Sokol, J., 2163, 2164.
Solnitzky, A., 2131.
Sommerville, R. G., 2129.
Sova, Z., 2029.
Spals, A. G., 2185.
Spector, W. G., 2235.
Spurrier, W., 2176.
Stableforth, A. W., 2010.
Stamatin, N., 2002.
Stampa, S., 2147.
Steele-Bodger, A., 2102.
Stephenson, B. J., 2186.
Stoll, N. R., 2156.
Stone, W. H., 2294.
Stormont, C., 2252.
Strauch, D., 1997.
Strumia, M. M., 2303.
Sulkin, S. E., 2128.
Sullivan, D. J., 2171.
Sultz, F. T., 2214.
Svanbaev, S., 2066.
Swanson, E. W., 2258.
Swenson, A., 2233.
Swingle, K. F., 2189.
Sytina, M. V., 2278.
Szent Iványi, L., 2116.
Szwabowicz, A., 2150.
- Tabuchi, K., 2035.
Talanta, S., 2051.
Taracena, M., 2072.
Tarkiewicz, S., 2199.
Terpstra, J. I., 2015.
Test, L. D., 2216.
Thijn, J. W., 2307.
Thomas, A., 2082.
Thorne, H. V., 2081.
du Toit, R., 2147.
Tong, W., 2197.
Torbert, B. G., 2157.
Traub, E., 2094.
Trowell, O. A., 2302.
Tucker, E. M., 2253.
Tudorin, C. D., 2025.
Turk, J. L., 2135.
- T-W-Fiennes, R. N., 2020.
Tyler, W. J., 2294.
- Ubeev, A. D., 2004.
Udall, R. H., 2184.
Underbjerg, G. K. L., 2245.
- Valberg, L. S., 2192.
VanDemark, N. L., 2047.
Vanderplasse, M., 2283.
Veall, N., page 410.
Verge, J., 2079, 2237.
Vetter, H., page 410.
Vieto, P. L., 2203.
Vizy, L., 2095.
Vodrážka, J., 2163, 2164.
Vrtiak, J., 2089, 2099.
- Waaler, H., 1989.
Walton, A., 2288.
Wakelin, R. W., 2229.
Wardlaw, A. C., 2008.
Warwick, E. J., 2181.
Washko, F. V., 2069.
Wassermann, M., 2223.
Watkins, J. R., 2128.
Wawrzyniak, M., 2276.
Weaver, R. H., 2300, 2301.
Webb, J., 2229.
Weiss, C., 2298.
Welch, H., 2309.
Wendell-Smith, C. P., 2262.
Wenke, M., 2238.
Whitney, G. F. H., 2234.
Whitten, W. K., 2285.
Wilcox, F. H., 2274.
Williams, P. L., 2262.
Willis, E. R., 2143.
Winter, A., 2042.
Winter, H., 2034.
Wintrobe, M. M., 2269.
Wolff, J., 2267.
Wolstenholme, B., 2064.
Worden, A. N., 2234.
Work, T. S., 2268.
Wright, A. A., 2266.
Wright, D., 2102.
Wright, R. D., 2254.
- Yoshimura, M., 2107.
Young, R. A., 2102.
Young, R. J., 2218.
Young, S., 2189.
Yu Kuang-hsi, 2060, 2061.
- Zadara, V. I., 2027.
Zakrzewski, A., 2207.
Zaks, M. G., 2247.
Zambelli, F., 2019.
Zendulka, M., 2165.
Zoletto, R., 2123.
Zwierzchowski, J., 2028.

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CONTENTS

	<i>Page</i>
Diseases caused by Bacteria and Fungi	411
Diseases caused by Protozoan Parasites	425
Diseases caused by Viruses and Rickettsia	427
Immunity	443
Parasites in Relation to Disease [Arthropods]	446
Parasites in Relation to Disease [Helminths]	448
Spontaneous and Transmissible Neoplasms and Leucaemias [Including Fowl Paralysis]	451
Nutritional and Metabolic Disorders	452
Diseases, General	460
Poisons and Poisoning	463
Pharmacology and General Therapeutics	466
Physiology, Anatomy and Biochemistry	467
Public Health, Veterinary Services and Veterinary Education	470
Reproduction and Reproductive Disorders	471
Zootechny	474
Technique and Apparatus	475
Miscellaneous	475
Report	475
Book Reviews	475

ERRATA

- V.B. 29, abst. 1974. Lines 13-14 of abst. "*Dermatophilus (Dermatonomus) congolensis*" should read: *Dermatophilus dermatonomus*.
- abst. 2308. Title line 2, for "aret" read Aret; last line of abst., for "76" read 46.

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INDEX TO AUTHORS

- Abraham, K. C., 2519.
 Adams, J. M., 2482.
 Adams, K. M., 2525.
 Adler, H. C., 2678.
 Agrimi, P., 2342, 2495.
 Aguggini, G., 2675.
 Ainsworth, G. C., page 483.
 Airapetyan, V. G., 2373.
 Aitken, F. C., page 483.
 Albou, M., 2435, 2470.
 Albornoz, J. E., 2341.
 Albu, T., 2471.
 Alcock, N., 2588.
 Alekperov, Y. G., 2420.
 Allden, W. G., 2573.
 Allen, F. E., 2312.
 Alton, G. G., 2371.
 Alvord, E. C., Jr., 2521.
 Amoroso, E. C., 2671.
 Anaya, J. S., 2616.
 Andrews, E. D., 2602.
 Antonio, C., 2646.
 Arakawa, S., 2445.
 Arkhipov, N. I., 2568.
 Armstrong, R. H., 2700.
 D'Ascani, E., 2342.
 Atanasiu, P., 2437.
 Aterman, K., 2501.
 Augustin, R., 2515.
 Augustinsson, K.-B., 2661.
 Austwick, P. K. C., page 483.
 Azevedo, J. A. R., 2465.
 Babudieri, B., 2376.
 Baczynski, E., 2365.
 Bailey, R. W., 2565.
 Bang, F. B., 2494.
 Bangham, D. R., 2518.
 Barboriak, J. J., 2598.
 Barnum, D. A., 2320.
 Barron, D., 2665.
 Le Bars, H., 2562.
 Bartfk, M., 2489.
 Bartley, C. H., 2312.
 Barua, D., 2506.
 Bassini, E., 2386.
 Bateman, J. K., 2478.
 Batte, E. G., 2350.
 Battelli, C., 2414.
 Bech, V., 2483.
 Beerens, H., 2380, 2381.
 Beeson, W. M., 2589.
 Beghelli, V., 2604.
 Behar, A. J., 2510.
 Behrens, H., 2624.
 Behrens, W., 2529.
 Bell, J. T., Jr., 2669.
 Bellán, G., 2623.
 Bellett, A. J. D., 2432.
 van Bemmél, A. C. V., 2612.
 Berger, E., 2710.
 Berthrong, M., 2335.
 Bertrand, M., 2583.
 Betts, A. O., 2477.
 Biberstein, E. L., 2347.
 Biche, Y., 2455, 2456.
 Bier, M., 2509.
 Bimmer, E., 2416.
 Birzu, I., 2344.
 Blagoveshchenskii, V. A., 2382.
 Blaker, R. G., 2334.
 Blanco Loizeler, A., 2399.
 Blomquist, M., 2608.
 Börnfors, S., 2625.
 Bogart, R., 2720.
 Bokma, L. H., 2654.
 Bonner, R. D., 2397.
 Bontscheff, N., 2468.
 Borghi, G., 2664.
 Borisova, L. V., 2383.
 Braço Forte, M. C., 2465.
 Brandly, C. A., 2492.
 Brandt, J. L., 2631.
 Branion, H. D., 2638.
 Brazier, M. A. B., 2716.
 Breza, M., 2548.
 Brooksby, J. B., 2430.
 Brunstad, G. E., 2604.
 Buckle, G., 2337.
 Budtz-Olsen, O. E., 2658.
 Bürki, F., 2367.
 Burmester, B. R., 2696.
 Caldwell, D., 2715.
 Cameron, A. E., 2700.
 Campbell, D. H., 2513.
 Canessa, S., 2434.
 Cavrini, C., 2331.
 Chadwick, D. L., 2482.
 Chamberlain, A. G., 2645.
 Chandler, R. L., 2340.
 Chang, M. C., 2630.
 Ch'ang, T. S., 2693.
 Cherkasov, D. P., 2566.
 Chodkowski, A., 2324.
 Chodnik, K. S., 2378.
 Christie, G. S., 2644.
 Christov, S., 2448.
 Ciorte, G., 2344, 2400.
 Cochran, C. G., 2312.
 Cochran, V. W., page 483.
 Cohn, M. L., 2336.
 Cole, H. H., page 483.
 Coles, E. H., 2314.
 Colover, J., 2522.
 Comotti, G., 2392.
 Conway, A., 2587.
 Cook, J. R., 2487.
 Coombe, J. B., 2641.
 Cooper, P. D., 2432.
 Cormus, D., 2470.
 Coronel, A. B., 2150.
 Couch, N. P., 2620.
 Cowgill, G. R., 2598.
 Crawley, W. E., 2610.
 Crowley, P., 2323.
 Cunha, R. G., 2427, 2428.
 Cunningham, I. J., 2579.
 Cunningham, M. P., 2339.
 Cupps, P. T., page 483.
 Dalmat, H. T., 2485.
 Dalton, R. G., 2663.
 Danieleescu, G., 2400.
 Danilova, A. K., 2390.
 Davidson, W. M., 2592.
 Davis, A. D., 2458.
 Davis, C. L., 2336.
 Dehority, B. A., 2593.
 Delcourte, F., 2380, 2381.
 Deniz, N., 2509.
 Denton, C. A., 2580.
 Dias Vigario, J., 2465.
 Dimitrov, S., 2618.
 Dimopoulos, G. T., 2403.
 Dinda, P. K., 2575.
 Dinter, Z., 2426.
 Dodd, D. C., 2610.
 Donald, C. M., 2573.
 Doney, J. M., 2667.
 Dott, H. M., 2684.
 Dräger, H., 2707.
 van Drimmelen, G. C., 2369.
 Dubs, N., 2583.
 Dunne, H. W., page 483.
 Duthell, H., 2313.
 Earle, H., 2364.
 Earley, E., 2459.
 Eaton, H. D., 2593.
 Ebner, K. E., 2632, 2662.
 Eckell, O. A., 2616.
 Ecker, R. E., 2701.
 Eddy, B. E., 2486.
 Edwards, B. L., 2348.
 Ehlers, M. H., 2690.
 Eichhorn, E. A., 2427.
 Elek, S. D., page 483.
 Elton, C. S., 2723.
 Enchev, S., 2621.
 English, P. B., 2655, 2705.
 Enns, T., 2666.
 Entel, H. J., 2704.
 Epstein, B., 2444.
 Erb, R. E., 2690.
 Ernek, E., 2439.
 Evans, J. A., 2645.
 Evans, J. V., 2697.
 Evans, W. C., 2645.
 Evans, W. G., 2321.
 Evers, N., 2715.
 Fauconner, B., 2506.
 Fedida, M., 2424, 2429.
 Feemster, R. F., 2443.
 Ferney, J., 2583.
 Fiedler, O. H. G., 2532.
 Field, H. I., 2379.
 Filsell, O. H., 2660.
 Fish, N. A., 2320.
 Fischer, E. W., 2663.
 Fischer, K., page 483.
 Fitzgerald, P. R., 2407.
 Fleming, G. A., 2636.
 Flint, J. C., 2402.
 Foote, L. E., 2403.
 Forbes, M., 2576.
 Fowler, S. H., 2604.
 Francetić, M., 2330.
 Frankel, J., 2459.
 Friend, C., 2558.
 Gabraschansky, P., 2618.
 Gadzhiev, K. S., 2420.
 Gagliardi, G., 2491.
 Gallo, C. G., 2647.
 Garren, H. W., 2559.
 Gaspardis, D., 2376.
 Gaspard, V., 2646.
 Gasparini, G., 2671.
 Gassner, F. X., 2717.
 Gates, E. H., 2482.
 Gebauer, O., 2537, 2711.
 Geib, L. W., 2637.
 Genest, P., 2501, 2502.
 Gentry, G. A., 2449.
 Gheorghiu, I., 2435, 2471.
 Gibbs, H. C., 2542.
 Giglio, D., 2414.
 Gifdenblat, A. A., 2527.
 Gillespie, R. W. H., 2377.
 Gilmour, N. J. L., 2339.
 Ginsberg, A., 2452.
 Giovaneli, N. E., 2422.
 Girard, O., 2313.
 Glaser, W., 2631.
 Glover, T. D., 2685.
 Gmitter, J., 2508.
 Gois, M., 2406.
 Goodwin, R. F. W., 2379.
 Gordon, R. S., 2597.
 Gorsuch, T. T., 2703.
 Gotink, W. M., 2681.
 Graber, R. E., 2500.
 Gracey, J. F., 2635.
 Grant, C. A., 2590.
 Grashius, J., 2712.
 Grave Pereira, C., 2465.
 Gray, K. W., 2577.
 Greenhall, A. M., 2433.
 Gregson, J. D., 2530.
 ap Griffith, G., 2561.
 Grifo, A. P., Jr., 2593.
 Grigoryan, G. A., 2538.
 Grimaldi, S., 2404.
 Grishenkova, A. S., 2466.
 Guarda, F., 2686.
 Gubin, A. P., 2446.
 Gubkin, S. M., 2358.
 Guerreiro, M. G., 2419.
 Gürtler, H., 2389.
 Guild, W. R., 2633.
 Guilhon, J., 2549.
 Haase, H., 2329.
 Habermann, R. T., 2562.
 Haddow, A. J., 2463.
 Hadžihalilović, F., 2330.
 Hagemen, E., 2662.
 Hallauer, C., 2709.
 Hamilton, M. A., 2335.
 Hammond, D. M., 2407.
 Hanson, R. P., 2492.
 Harding, J. D. J., 2476.
 Harms, F., 2354.
 Harris, H., 2697.
 Harrison, R. G., 2718.
 Hauser, K. W., 2363.
 Hayward, B. J., 2515.
 Hazzard, D. G., 2593.
 Heath, G. B. S., 2560.
 Heeschen, W., 2547.
 Heideman, M. J., 2659.
 Hellegers, A., 2665.
 Hepple, J. R., 2378.
 Herlich, H., 2543.
 Hess, E., 2490.
 Hess, R., 2588.
 Hewetson, R. W., 2572.
 Hiepe, T., 2389.
 Hieronymi, B., 2505.
 Hill, C. H., 2559.
 Hill, H. J., 2717.
 Hobbs, K. R., 2518.
 Hogan, K. G., 2579.
 Holmgren, B., 2440.
 Holt, A. F., 2680.
 Hoover, C. R., 2662.
 Howard, B., 2658.
 Hrusovsky, J., 2489.
 Hubrig, T., 2326.
 Huckabee, W., 2665.
 Hübner, L., 2554.
 Huffaker, R. H., 2321.
 Hughes, T. E., page 483.
 Humphrey, J. H., 2523, 2524.
 Hunt, D. M., 2630.
 Hutchinson, H. L., 2355.
 Huygelen, C., 2411, 2455, 2456.
 Ikari, N., 2364.
 Ilijas, B., 2550.
 Imagawa, D. T., 2482.
 Inaba, Y., 2504.
 Irsara, A., 2491.
 Ishihara, T., 2410.
 Ishii, F., 2361.
 Ishii, S., 2410, 2504.
 Ishizaka, K., 2513.
 Ishizaka, T., 2513.
 Isoplatovskaya, M. V., 2382.
 Itkin, B. Z., 2390.
 Ivanov, I., 2621.
 Ivanov, I. V., 2570, 2571.
 Iyer, P. K. K., 2628.
 Jacobs, L., 2415.
 Jacotot, H., 2388.
 Jakubik, J., 2496.
 Jarrett, I. G., 2660.
 Jensen, R., 2402, 2717.
 Jochem, E.-M., 2322.
 Johanovsky, J., 2315, 2333.
 Johnson, A. E., 2407.
 Johnson, H. D., 2657.
 Joubert, L., 2349.
 Kästner, R., 2389.
 Kalter, H., 2601.
 Kavit, A. Y., 2394.
 Kays, J. M., 2732.
 Kelen, A. E., 2352.
 Kennedy, P. C., 2347.
 Kenzy, S. G., 2377.
 Keown, G. H., 2377.
 v. Kerékjártó, B., 2505.
 Kerr, W. R., 2366.
 Keymer, I. F., 2614.
 Khachatryan, A. B., 2373.
 Khankishiev, A. M., 2420.
 Khatin, M. G., 2326.
 Kies, M. W., 2521.
 King, J. W. B., 2697.
 Kirk, R. W., 2626.
 Kirkman, G. T., 2627.
 Kirkman, H., 2627.
 Kirschstein, R. L., 2486.
 Kitamura, Y., 2541.
 Klein, H., 2329.
 Klein, M., 2459.
 Knight, P. L., 2599.
 Knight, R. A., 2543.
 Kolomiets, Y. M., 2526.
 Konovalova, A. G., 2375.
 Koutz, F. R., 2534.
 Kunkel, H. O., 2574.
 Kunter, E., 2421, 2453.
 Kužmina, A. P., 2382.
 Laird, R. J., 2577.
 Lalow, N., 2618.
 Lamont, P. H., 2477.
 Lang, V., 2326.
 Larson, B. L., 2632, 2662.
 Laufer, A., 2510.
 Laughland, D. H., 2592.
 Lawrence, J. C., 2316.
 Leidl, W., page 483.
 Lépine, P., 2437.
 Lerner, I. M., 2719.
 Lev, M., 2576.
 Levaditi, J., 2388.
 Levy, R. S., 2334.
 Lewis, F. A., 2438.
 Lieberman, R., 2364.
 Lindahl, J., 2440.
 Lindley, E. P., 2398.
 Linsert, H., 2362.
 Lippi, M., 2404.
 Littman, M. L., 2365.
 Lockhart, W. R., 2701.
 Löliger, H.-C., 2391.
 Lombard, L. S., 2555.
 Louw, J. G., 2581.
 Incam, F., 2429.
 Lumb, W. V., 2401.
 Lunde, M. N., 2415.

- Lur'e, M. Z., 2526.
 Lurie, M. B., 2354.
 Luttrell, C. N., 2194.
 Lyne, A. G., 2659.
- Maas, A., 2622.
 McClarin, R., 2355.
 McCullough, N. B., 2364.
 MacDonald, W. N., 2355.
 Macfarlane, W. V., 2658.
 McFerran, J. B., 2457.
 Machlin, L. J., 2597.
 Macicka, O., 2508.
 McIntosh, B. M., 2447.
 MacIntyre, I., 2558.
 McLaren, A., 2507, 2683.
 McLeod, N. A., 2575.
 Macpherson, J. W., 2677.
 Maffey, J., 2319.
 Magnani, G., 2673, 2674.
 Mahaffey, L. W., 2563.
 Mankiewicz, E., 2338.
 Manunta, G., 2668.
 Maplesden, D. C., 2638.
 Marcea, E., 2344.
 Marongiu, A., 2668.
 Marsh, C. L., 2520.
 Marsh, H., 2713.
 Martirosyan, G. G., 2373.
 Martynov, V. G., 2691.
 Mascaro, L. A., 2441.
 Matov, K., 2617.
 Matrone, G., 2607.
 Matscher, R., 2664.
 Matumoto, M., 2462, 2504.
 Mayr, A., 2472, 2473, 2474, 2475.
 Medanic, B., 2330.
 Meisky, K. A., 2597.
 Meli, A., 2675.
 Melnick, J. L., 2710.
 Meschia, G., 2665.
 Metcalfe, J., 2665.
 Meyer, H., 2585.
 Meyer, K. F., 2709.
 Michie, D., 2683.
 Middlebrook, G., 2336.
 Mihaita, S., 2370.
 Mika, E. A., 2493.
 Milbradt, H., 2325.
 Millen, J. W., 2504.
 Miller, A. C., 2721.
 Miller, E. C., 2580.
 Mochrie, R. D., 2350.
 Mohr, W., 2416.
 Molchanov, S. G., 2567.
 Moll, T., 2458.
 Mollé, J., 2562.
 Moloney, J. B., 2555.
 Monteverde, J. J., 2357.
 Moore, E. B., 2702.
 Mora, A., 2328.
 Morimoto, T., 2504.
 Morris, R. J. H., 2658.
 Mortelmans, J., 2411, 2455, 2456.
 Mota, I., 2523, 2524.
 Motzok, I., 2638.
 Müller, P., page 483.
 Müller, R. H., 2464.
 Murdoch, C. R., 2355.
 Murnane, D., 2406.
- Nagai, T., 2360.
 Nakamura, J., 2451.
 Namiooka, S., 2360.
 Nassal, J., 2332.
 Nelson, M., 2438.
 Van Ness, G. B., 2321.
 Newell, K. W., 2355.
 Newton, O. M., 2687.
 Nica, A., 2470.
 Nicol, T., 2656.
 Nigli, H. B., 2536.
 Nishi, I., 2462.
 Nitoin, I., 2344, 2435, 2471.
 Nitzschke, E., 2372.
 Nižnanský, F., 2508.
 Noice, F., 2453.
 Noronha, F. M. O., 2460.
 Novara, V., 2408.
- Odeblad, E., 2604.
 Ohbayashi, M., 2541.
 Okazaki, W., 2377.
- Oliveira Noronha, F., 2465.
 Oliver, W. T., 2637, 2638.
 Olsson, B., 2661.
 Omori, T., 2504.
 Orlov, F. M., 2114.
 Orta, B., 2313.
 Osborne, J. C., 2350.
 Osikovski, E., 2617.
 Otte, E., 2650.
 Oudar, J., 2349.
 Oxford, A. E., 2564.
- Pallaske, G., 2724.
 Palma, E. E., 2422.
 Papparella, V., 2557.
 Parmeggiani, A., 2331.
 Patera, E., 2412.
 Pathak, R. C., 2628.
 Payne, L. C., 2520.
 Payne, W. J. A., 2596.
 Pearse, A. G. E., 2558.
 Pehl, K.-H., 2469.
 Peirce, A. W., 2639.
 Percival, J., 2609.
 Persiani, G., 2651.
 Peters, J. C., 2612.
 Peterson, M., 2666.
 Pettit, J. P., 2549.
 Philipson, L., 2385.
 Pierce, A. E., 2517.
 Pillet, J., 2313.
 Pinkers, E., 2455, 2456.
 Pirsch, J. B., 2393.
 La Placa, M., 2323.
 Plashke, W., 2346.
 Plotkin, S. A., 2321.
 Plumlee, M. P., 2589.
 Pogosyan, A. A., 2373, 2374.
 Pollard, M., 2497, 2498, 2708.
 Pomeroy, B. S., 2500.
 Popa, E., 2493.
 Porter, D. A., 2543.
 Porter, K. A., 2629.
 Potemkin, V. I., 2527.
 Preobrazhenskii, N. M., 2390.
 Preston, T. R., 2575.
 Price, E. K., 2378.
 Prystowsky, H., 2665.
 Przyjakowski, Z., 2359.
 Pullin, J. W., 2533.
 Te Punga, W. A., 2387.
 Pyl, G., 2431.
- Quinchon, C., 2317.
- Ragsdale, A. C., 2657.
 Ramsey, H. A., 2607.
 Randall, C. C., 2449.
 Rankin, J. E. F., 2366.
 Rasori, L., 2556.
 Raspini, J. M., 2484.
 Rawes, D. A., 2546.
 Reculard, P., 2481.
 Reid, R. L., 2672.
 Reid, T. F., 2582.
 Reinach, N., 2581.
 Reinhard, H., 2640.
 Reis, P. J., 2672.
 Remotti, G., 2689.
 Rerat, A., 2562.
 Reyniers, J. A., 2599.
 Rhodes, A. J., page 483.
 Ribeiro, J. M., 2460, 2463.
 Richou, H., 2317.
 Richou, R., 2317.
 Richter, G. W., 2652.
 Richter, M., 2514.
 Ringen, L. M., 2377.
 Rivenson, S., 2422.
 Robbins, J. D., 2574.
 Robertson, E. D. S., 2721.
 Roboz, E., 2521.
 Rodrigues Ribeiro, A. M., 2465.
 Röhrer, H., 2431.
 Roemmele, O., 2615.
 Roepke, M. H., 2402.
 Romagnoli, A., 2327.
 Roncalli, R., 2651.
 Roots, E., 2499.
 van Rooyen, C. E., page 483.
 Rose, B., 2514.
 Rosenberger, G., 2547.
 Rossmann, W., 2643.
- Rott, R., 2499.
 Rousseau, J. E., Jr., 2593.
 Rowlands, I. W., 2682.
 Russeff, C., 2468.
- Saburi, Y., 2462.
 Sakazaki, R., 2360, 2361.
 Salisbury, L. E., 2531.
 Sanders, F. K., 2507.
 Saraiva, D., 2418.
 Sauer, F., 2592.
 Sbernadori, U., 2689.
 Scarnell, J., 2546.
 Schechtman, A. M., 2519.
 Schipper, I. A., 2453.
 Schmidel, E., 2724.
 Schmidt, P., 2585.
 Schmitt, J., 2602.
 Schmittl, E., 2345.
 Schneerson, S. S., 2395.
 Schoop, G., 2692.
 Schrader, G. T., 2403.
 Schultz, H. E., page 483.
 Schulz, L. C., 2624.
 Schulz, R., 2553.
 Schulze, W., 2469.
 Scott, G. R., 2452.
 Sehon, A. H., 2514.
 Seidl, S., 2436.
 Semellini, L., 2409, 2611.
 Semerschiev, B., 2448.
 Serrão, U. M., 2428.
 Sewell, I. A., 2656.
 Shaburov, M. S., 2446.
 Shaw, W. B., 2351.
 Shepard, R. H., 2666.
 Shirlaw, J. F., 2620.
 Shishkov, V. P., 2569.
 Shope, R. E., 2467.
 Sibalin, M., 2426.
 Sieburth, J. McN., 2613.
 Siem, R. A., 2482.
 Silverman, P. H., 2545.
 De Simon, M., 2470.
 Simonnet, H., 2562.
 Simow, I., 2618.
 Sinclair, D. P., 2600, 2602.
 Singh, A., 2628.
 Skoda, R., 2480.
 Sladen, B., 2666.
 Slanetz, L. W., 2512.
 Smith, R. H., 2584.
 Smith, W. H., 2589.
 Smyth, P. J., 2587.
 Sobey, W. R., 2525.
 Sogoyan, I. S., 2539, 2540.
 Solov'ev, V. P., 2526.
 Soltys, M. A., 2405.
 Sommerville, R. I., 2544.
 Sorrell, B., 2637.
 Soulsby, E. J. L., 2544.
 Southcott, W. H., 2572.
 Spiers, J. A., 2515.
 Stanca, M., 2471.
 Starke, G., 2436.
 Starr, T. J., 2497.
 Staub, H., 2503.
 Stavitsky, A. B., 2343.
 Stepanova, E. N., 2699.
 Stewart, D. F., 2544.
 Stewart, S. E., 2486.
 Stillnovic, Z., 2606.
 Strauch, D., 2372.
 Stringam, E. W., 2695.
 Suhaci, I., 2493.
 Sürjan, M., 2384.
 Svedmyr, A., 2440.
 Sweatman, G. K., 2533, 2535.
 Sykes, J. A., 2702.
 Szafranski, J., 2365.
- Tacu, D., 2400.
 Tal, C., 2510.
 Teitelbaum, P., 2509.
 Teixeira, M. J. O., 2465.
 Tennent, R. B., 2706.
 Terlecki, S., 2351.
 Terpstra, J. I., 2353.
 Terry, R. J., 2518.
 Teuscher, E., 2536.
 Thackeray, E. L., 2320.
 Thafvelin, B., 2590.
 Theiler, G., 2531.
- Thienpont, D., 2455, 2456.
 Thomas, A. J., 2645.
 Thomson, J. M., 2577.
 Thomson, W., page 483.
 Thorne, J. L., 2407.
 Thornton, R. H., 2609.
 Todd, J. R., 2386, 2635.
 Tolhurst, J. C., 2337.
 Tomov, T., 2621.
 Tomsikova, A., 2396.
 Torlone, V., 2412.
 Tortorella, I., 2428.
 Tozzini, F., 2342, 2461, 2642.
 Traub, E., 2442.
 Tribe, D. E., 2641.
 Trnka, Z., 2516.
 Tsiroyannis, E., 2619.
 Tsyro, A. I., 2375.
 Tunkil, B., 2330.
- Uherko, J., 2356.
 Ursache, R., 2403.
 Urushido, M., 2361.
 Vallée, A., 2383.
 Vantsis, J. T., 2479.
 Vasilev, I., 2617.
 Velichkin, P. A., 2551.
 Vertinskii, K. I., 2390.
 Vesselinovich, S. D., 2677.
 Vickery, B. C., page 483.
 Vilim, V., 2396.
 Vlasova, E. V., 2382.
 van Vliet, N., 2712.
 Vollmerhaus, B., 2688.
 Voorspuij, A. J. Z., 2654.
 Voss, H. J., 2454.
 Vrtiak, O. J., 2489.
 Vuorinen, K., 2605.
- Wagner, V., 2396.
 Walker-Love, J., 2577.
 Walsh, M. J., 2587.
 Walsh, T., 2636.
 Walter, W. G., 2696.
 Warkany, J., 2601.
 Warren, F. L., 2697.
 Watanabe, S., 2360.
 Waters, N. F., 2696.
 Waterson, A. P., 2488.
 van Waveren, G. M., 2363.
 Weber, A. F., 2669.
 Weidmann, S. M., 2670.
 Weigle, W. O., 2512.
 Weinhold, E., 2704.
 Wellington, N. A. M., 2337.
 Westin, B., 2694.
 Whedon, A. D., 2598.
 White, E. P., 2648.
 Whitehead, R. G., 2670.
 Wiley, G. G., 2318.
 Wilkinson, F. C., 2595.
 Williams, F. P., Jr., 2552.
 Wise, G. H., 2607.
 Wittig, W., 2370.
 Wittmann, G., 2472, 2475.
 Wolf, B., 2343.
 Wolochow, H., 2511.
 Woodlam, D. H. M., 2594.
 Woolley, D. W., 2653.
 Worden, A. N., 2582.
 Wostmann, B. S., 2599.
 Wright, E., 2600.
- Yamashita, J., 2541.
 Yanchev, Y., 2617.
 Yanovich, G. I., 2528.
 Yaoi, H., 2445.
 Yeck, R. G., 2657.
 Yeu, F., 2451.
 Yost, D. H., 2417.
 Young, R. D., 2486.
- Zappasodi, P., 2334.
 Zafail, J., 2396.
 von Zeipel, G., 2440.
 Zellat, J., 2459.
 Zhivkov, V., 2679.
 Zimmermann, T., 2425.
 Zorawski, C., 2324.
 Zuffa, A., 2480.
 Zukowska-Pietraszek, T., 2578.
 Zusechek, F., 2492.
 Zwart, D., 2413.

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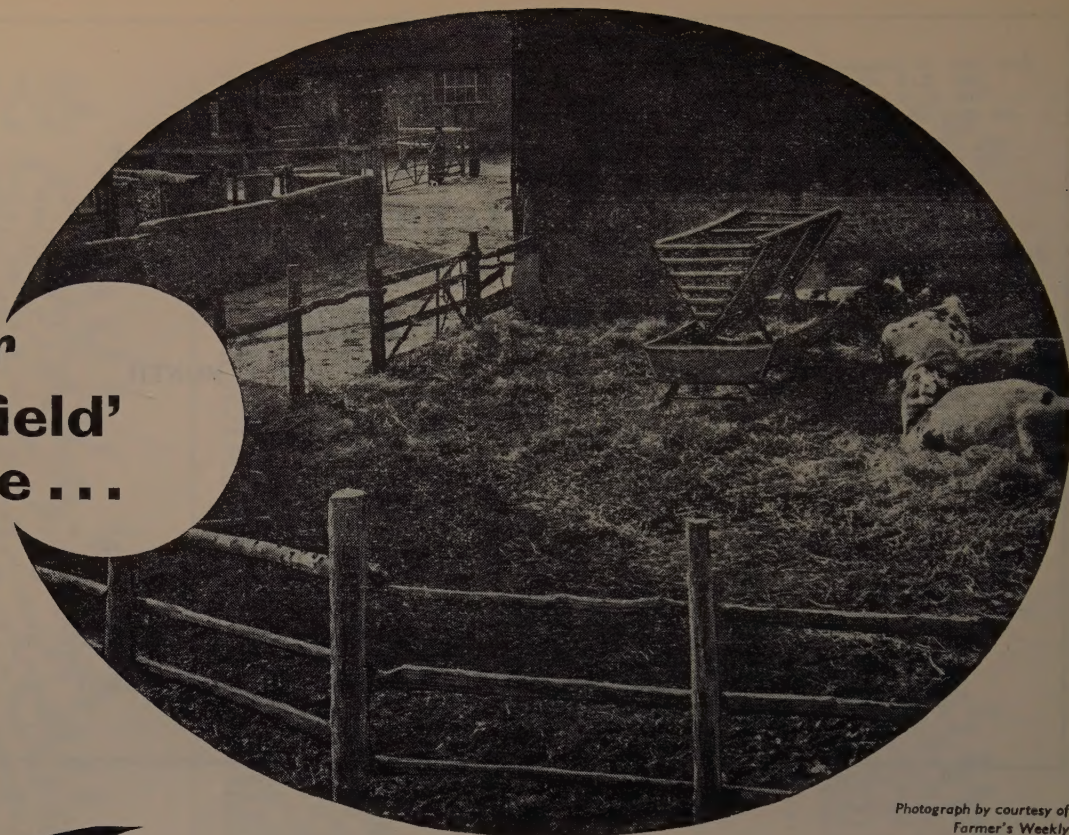
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